URBAN TREES AND SHRUBS

A guide to the selection of trees and shrubs in urban areas.

Section I

Selecting Deciduous Trees for Urban Areas - 118 slides and text. A review of deciduous tree species that can thrive in typical urban environments; their particular characteristics, relative hardiness and best uses.

Index by: Species & Size

Thumbnails

Section II

Selecting Deciduous Shrubs for Urban Areas - 72 slides and text. A review of deciduous shrub species suited to urban landscape uses and conditions, including information on hardiness and ornamental features.

Index by: Species & Size

Thumbnails

Section III

Selecting Conifers for Urban Areas - 75 slides and text. A review of conifer characteristics, genera and growth habits, including recommendations for urban landscapes uses.

Index by: Species & Size

Thumbnails

Produced by the Chicago Botanic Garden

Slide assistance provided by the school of Forest Resources, Pennsylvania State University.

Funding provided in part by the USDA Forest Service, Northeastern, Area State and Private Forestry, Midwest Center for Urban and Community Forestry

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Section I: Selecting Deciduous Trees for Urban Areas

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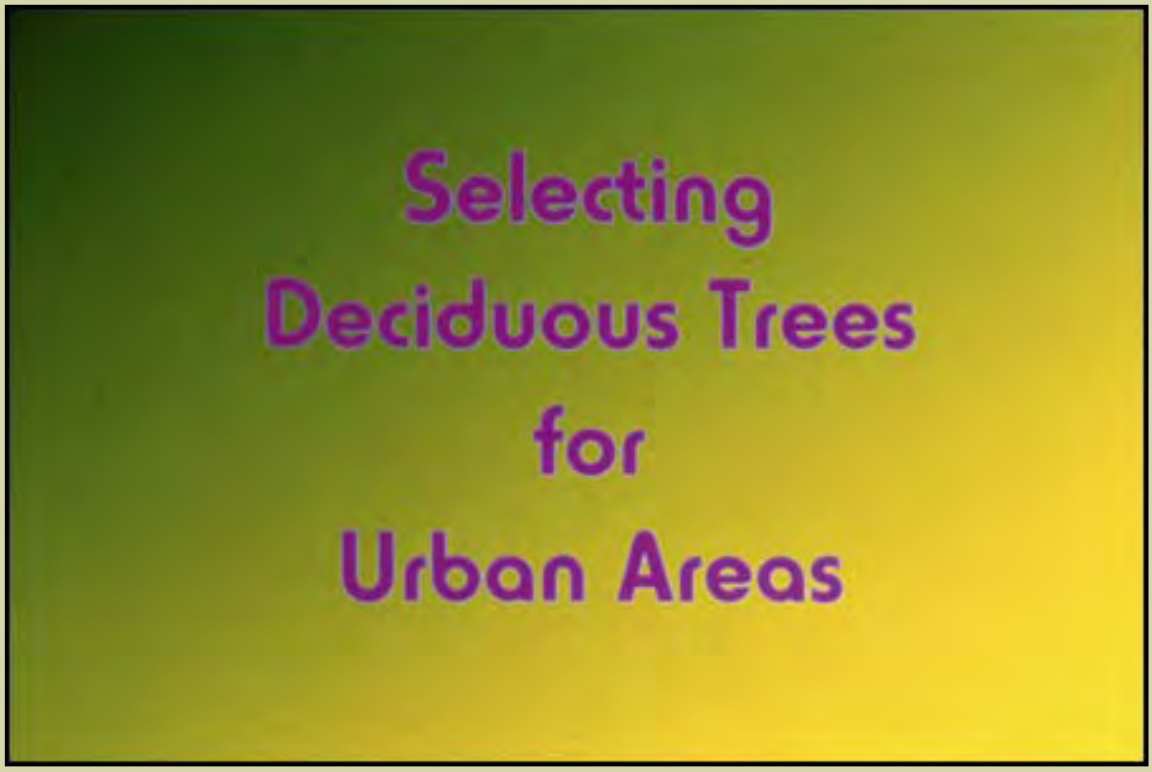

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Slide 3

Trees With a Height of 30 Feet or Less: Examples.

- Acer campestra
- Acer ginnala
- Amelanchier laevis 'Cumulus'
- Amalanchier x grandiflora 'Autumn Brilliance'
- Carpinus caroliniana
- Crataegus phaenopyrum
- Crataegus viridis 'Winter King'
- Koelreuteria paniculata
- Magnolia stellata 'Royal Star'
- Malus 'David'
- Malus 'Donald Wyman'
- Malus 'Prairie Fire'
- Malus 'Snowdrift'
- Malus x zumi 'Calocarpa'
- Syringa reticulata 'Ivory silk'

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Slide 4
Acer campestre
Hedge Maple

SIZE: 30'H x 30'W.
HARDINESS: zone 5 to 7.
HABIT: Dense, broad spreading.
FOLIAGE: Green, 2-4" rounded lobes, subdued yellow in fall.
DESCRIPTION: Tolerates urban conditions with no serious pests or disease problems. Tolerates dry soil, compaction and air pollutants.

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Slide 5
Acer campestre
Hedge Maple

SIZE: 30'H x 30'W.
HARDINESS: zone 5 to 7.
HABIT: Dense, broad spreading.
FOLIAGE: Green, 2-4" rounded lobes, subdued yellow in fall.
DESCRIPTION: Tolerates urban conditions with no serious pests or disease problems. Tolerates dry soil, compaction and air pollutants.

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Slide 6
Acer campestre
Hedge Maple

SIZE: 30'H x 30'W.
HARDINESS: zone 5 to 7.
HABIT: Dense, broad spreading.
FOLIAGE: Green, 2-4" rounded lobes, subdued yellow in fall.
DESCRIPTION: Tolerates urban conditions with no serious pests or disease problems. Tolerates dry soil, compaction and air pollutants.

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Slide 7
Acer ginnala
Amur Maple

SIZE: 18'H X 25'W.
HARDINESS: zone 3 to 7.
HABIT: Multi-stemmed small tree or large shrub with rounded outline. Can be trained into tree form with single leader.
FOLIAGE: Glossy, 2-3" leaves turning orange to red in fall.
DESCRIPTION: Can be used as hedge, specimen, or in masse. Very cold hardy and adaptable to a wide range of soil conditions. Tolerates more shade than most maples.

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Slide 8
Acer ginnala
Amur Maple

SIZE: 18'H X 25'W.
HARDINESS: zone 3 to 7.
HABIT: Multi-stemmed small tree or large shrub with rounded outline. Can be trained into tree form with single leader.
FOLIAGE: Glossy, 2-3" leaves turning orange to red in fall.
DESCRIPTION: Can be used as hedge, specimen, or in masse. Very cold hardy and adaptable to a wide range of soil conditions. Tolerates more shade than most maples.

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Slide 9
***Amelanchier laevis* 'Cumulus'**
Cumulus Serviceberry

SIZE: 25'H x 15'W.
HARDINESS: zone 4 to 7.
HABIT: Moderately columnar, single trunk or clump form.
FOLIAGE: Dark green turning yellow-orange to scarlet in fall.
DESCRIPTION: Soft textured, highly versatile street tree or specimen. Two inch white blossoms engulf the tree in spring followed by red berries emerging in early summer and turning purple in June; will tolerate some shade. Single trunk forms are recommended for street tree use.

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Slide 10
***Amelanchier laevis* 'Cumulus'**
Cumulus Serviceberry

SIZE: 25'H x 15'W.
HARDINESS: zone 4 to 7.
HABIT: Moderately columnar, single trunk or clump form.
FOLIAGE: Dark green turning yellow-orange to scarlet in fall.
DESCRIPTION: Soft textured, highly versatile street tree or specimen. Two inch white blossoms engulf the tree in spring followed by red berries emerging in early summer and turning purple in June; will tolerate some shade. Single trunk forms are recommended for street tree use.

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Slide 11
Amelanchier x grandiflora
'AutumnBrilliance'
Autumn Brilliance Serviceberry

SIZE: 20'H x 15'W.
HARDINESS: zone 4 to 8.
HABIT: Upright multi-stem or single trunk.
FOLIAGE: Dark, lustrous green turning to brilliant red in fall.
DESCRIPTION: 2" white blossoms in clusters appearing in spring. Spreading branch habit and limited size make this tree adaptable to many sit ations. Requires little maintenance.

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Slide 12
Amelanchier x grandiflora 'AutumnBrilliance'
Autumn Brilliance Serviceberry

SIZE: 20'H x 15'W.
HARDINESS: zone 4 to 8.
HABIT: Upright multi-stem or single trunk.
FOLIAGE: Dark, lustrous green turning to brilliant red in fall.
DESCRIPTION: 2" white blossoms in clusters appearing in spring. Spreading branch habit and limited size make this tree adaptable to many sit ations. Requires little maintenance.

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Slide 13
Amelanchier x grandiflora
'AutumnBrilliance'
Autumn Brilliance Serviceberry

SIZE: 20'H x 15'W.
HARDINESS: zone 4 to 8.
HABIT: Upright multi-stem or single trunk.
FOLIAGE: Dark, lustrous green turning to brilliant red in fall.
DESCRIPTION: 2" white blossoms in clusters appearing in spring. Spreading branch habit and limited size make this tree adaptable to many sit ations. Requires little maintenance.

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Slide 14
Carpinus caroliniana
American Hornbeam

SIZE: 30'H x 25'W.
HARDINESS: zone 3 to 9.
HABIT: Ovate or broadly columnar, irregular.
FOLIAGE: 2-4" bluish green leaves, yellow orange to deep red in fall.
DESCRIPTION: Smooth gray bark often with a crooked trunk. Often called musclewood because of the trunk's sinewy tendon like appearance. Slow growing, tolerates shade and will also tolerate flooding as it grows native along streams and riverbanks.

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Slide 15
Carpinus caroliniana
American Hornbeam

SIZE: 30'H x 25'W.
HARDINESS: zone 3 to 9.
HABIT: Ovate or broadly columnar, irregular.
FOLIAGE: 2-4" bluish green leaves, yellow orange to deep red in fall.
DESCRIPTION: Smooth gray bark often with a crooked trunk. Often called musclewood because of the trunk's sinewy tendon like appearance. Slow growing, tolerates shade and will also tolerate flooding as it grows native along streams and riverbanks

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Slide 16
Carpinus caroliniana
American Hornbeam

SIZE: 30'H x 25'W.
HARDINESS: zone 3 to 9.
HABIT: Ovate or broadly columnar, irregular.
FOLIAGE: 2-4" bluish green leaves, yellow orange to deep red in fall.
DESCRIPTION: Smooth gray bark often with a crooked trunk. Often called musclewood because of the trunk's sinewy tendon like appearance. Slow growing, tolerates shade and will also tolerate flooding as it grows native along streams and riverbanks.

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Slide 17
Crataegus phaenopyrum
Washington Hawthorn

SIZE: 25'H x 25'W.
HARDINESS: zone 4 to 8.
HABIT: Broad-ovate, densely branched.
FOLIAGE: 1" to 3" glossy dark green leaves, orange-red to purple in fall.
DESCRIPTION: Tolerates severe urban stresses including drought and pollution. Offers beautiful flowers and fruits. Thorns on lower branches maybe harmful.

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Slide 18
Crataegus phaenopyrum
Washington Hawthorn

SIZE: 25'H x 25'W.
HARDINESS: zone 4 to 8.
HABIT: Broad-ovate, densely branched.
FOLIAGE: 1" to 3" glossy dark green leaves, orange-red to purple in fall.
DESCRIPTION: Tolerates severe urban stresses including drought and pollution. Offers beautiful flowers and fruits. Thorns on lower branches maybe harmful.

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Slide 19
Crataegus phaenopyrum
Washington Hawthorn

SIZE: 25'H x 25'W.
HARDINESS: zone 4 to 8.
HABIT: Broad-ovate, densely branched.
FOLIAGE: 1" to 3" glossy dark green leaves, orange-red to purple in fall.
DESCRIPTION: Tolerates severe urban stresses including drought and pollution. Offers beautiful flowers and fruits. Thorns on lower branches maybe harmful.

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Slide 20
Crataegus viridis 'Winter King'
Winterking Hawthorn

SIZE: 25'H x 35'W.
HARDINESS: zone 4 to 8.
HABIT: Broad, wide spreading, open habit.
FOLIAGE: Glossy green leaves turning bronze red in fall.
DESCRIPTION: Performs well in adverse conditions. Two inch white flower clusters in spring and ¼" orange-red berries persisting through winter. Occasional thorns may be a problem.

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Slide 21
Crataegus viridis 'Winter King'
Winterking Hawthorn

SIZE: 25'H x 35'W.
HARDINESS: zone 4 to 8.
HABIT: Broad, wide spreading, open habit.
FOLIAGE: Glossy green leaves turning bronze red in fall.
DESCRIPTION: Performs well in adverse conditions. Two inch white flower clusters in spring and ¼" orange-red berries persisting through winter. Occasional thorns may be a problem.

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Slide 22
Crataegus viridis 'Winter King'
Winterking Hawthorn

SIZE: 25'H x 35'W.
HARDINESS: zone 4 to 8.
HABIT: Broad, wide spreading, open habit.
FOLIAGE: Glossy green leaves turning bronze red in fall.
DESCRIPTION: Performs well in adverse conditions. Two inch white flower clusters in spring and ¼" orange-red berries persisting through winter. Occasional thorns may be a problem.

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Slide 23
Koelreuteria paniculata
Goldenrain Tree

SIZE: 30'H x 30'W.
HARDINESS: zone 5 to 9.
HABIT: Broadly ovate to globose.
FOLIAGE: Pinnately compound, 1½" to 3" feathery blue-green leaflets appearing bluish in spring and turning yellow in fall.
DESCRIPTION: Tolerant of drought, heat, pollution, and alkaline soils. Bright yellow flower spikes appear in midsummer when few other trees are flowering. Excellent lawn specimen and also street tree. Abundant seed pods may result in seedlings in fertile soil.

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Slide 24
Koelreuteria paniculata
Goldenrain Tree

SIZE: 30'H x 30'W.
HARDINESS: zone 5 to 9.
HABIT: Broadly ovate to globose.
FOLIAGE: Pinnately compound, 1½" to 3" feathery blue-green leaflets appearing bluish in spring and turning yellow in fall.
DESCRIPTION: Tolerant of drought, heat, pollution, and alkaline soils. Bright yellow flower spikes appear in midsummer when few other trees are flowering. Excellent lawn specimen and also street tree. Abundant seed pods may result in seedlings in fertile soil.

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Slide 25
Koelreuteria paniculata
Goldenrain Tree

SIZE: 30'H x 30'W.
HARDINESS: zone 5 to 9.
HABIT: Broadly ovate to globose.
FOLIAGE: Pinnately compound, 1½" to 3" feathery blue-green leaflets appearing bluish in spring and turning yellow in fall.
DESCRIPTION: Tolerant of drought, heat, pollution, and alkaline soils. Bright yellow flower spikes appear in midsummer when few other trees are flowering. Excellent lawn specimen and also street tree. Abundant seed pods may result in seedlings in fertile soil.

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Slide 26
Magnolia stellata 'Royal Star'
Royal Star Magnolia

SIZE: 20'H x 15'W.
HARDINESS: zone 4 to 8.
HABIT: Broad to ovate, single trunk or clump form.
FOLIAGE: 2" to 4" medium green leaves turning bronzy yellow in fall.
DESCRIPTION: Good accent plant and often grown as a large shrub. Lovely white magnolia-like flowers. Needs slight protection from harsh winter conditions.

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Slide 27
Magnolia stellata 'Royal Star'
Royal Star Magnolia

SIZE: 20'H x 15'W.
HARDINESS: zone 4 to 8.
HABIT: Broad to ovate, single trunk or clump form.
FOLIAGE: 2" to 4" medium green leaves turning bronzy yellow in fall.
DESCRIPTION: Good accent plant and often grown as a large shrub. Lovely white magnolia-like flowers. Needs slight protection from harsh winter conditions.

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Slide 28
Magnolia stellata 'Royal Star'
Royal Star Magnolia

SIZE: 20'H x 15'W.
HARDINESS: zone 4 to 8.
HABIT: Broad to ovate, single trunk or clump form.
FOLIAGE: 2" to 4" medium green leaves turning bronzy yellow in fall
DESCRIPTION: Good accent plant and often grown as a large shrub. Lovely white magnolia-like flowers. Needs slight protection from harsh winter conditions.

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Slide 29
Malus 'David'
Crabapple

SIZE: 15'H x 15'W.
HARDINESS: zone 3 to 7.
HABIT: Compact, rounded.
FOLIAGE: Light green, glossy.
DESCRIPTION: Good specimen tree of compact size excellent for smaller spaces. Creamy white flowers and persistent red fruit; excellent disease resistance to apple scab.

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Slide 30
Malus 'David'
Crabapple

SIZE: 15'H x 15'W.
HARDINESS: zone 3 to 7.
HABIT: Compact, rounded.
FOLIAGE: Light green, glossy.
DESCRIPTION: Good specimen tree of compact size excellent for smaller spaces. Creamy white flowers and persistent red fruit; excellent disease resistance to apple scab.

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Slide 31
Malus 'Donald Wyman'
Donald Wyman Crabapple

SIZE: 20'H x 20'W.
HARDINESS: zone 3 to 7.
HABIT: Rounded, spreading, can be single trunk or clump form.
FOLIAGE: Dark glossy green.
DESCRIPTION: An excellent crab with white flowers and glossy, bright red fruit that persist longer than most crabs; slightly susceptible to apple scab.

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Slide 32
Malus 'Donald Wyman'
Donald Wyman Crabapple

SIZE: 20'H x 20'W.
HARDINESS: zone 3 to 7.
HABIT: Rounded, spreading, can be single trunk or clump form.
FOLIAGE: Dark glossy green.
DESCRIPTION: An excellent crab with white flowers and glossy, bright red fruit that persist longer than most crabs; slightly susceptible to apple scab.

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Slide 33
Malus 'Prairie Fire'
Prairiefire Crabapple

SIZE: 20'H x 20'W.
HARDINESS: zone 3 to 7.
HABIT: Upright, spreading, rounded.
FOLIAGE: Purple, turning reddish-green.
DESCRIPTION: Pinkish red flowers and dark red fruit; excellent disease resistance to apple scab.

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Slide 34
Malus 'Prairie Fire'
Prairiefire Crabapple

SIZE: 20'H x 20'W.
HARDINESS: zone 3 to 7.
HABIT: Upright, spreading, rounded.
FOLIAGE: Purple, turning reddish-green.
DESCRIPTION: Pinkish red flowers and dark red fruit; excellent disease resistance to apple scab.

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Slide 35
Malus 'Prairie Fire'
Prairiefire Crabapple

SIZE: 20'H x 20'W.
HARDINESS: zone 3 to 7.
HABIT: Upright, spreading, rounded.
FOLIAGE: Purple, turning reddish-green.
DESCRIPTION: Pinkish red flowers and dark red fruit; excellent disease resistance to apple scab.

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Slide 36
Malus 'Snowdrift'
Snowdrift Crabapple

SIZE: 20'H x 20'W.
HARDINESS: zone 3 to 7.
HABIT: Dense, upright, spreading.
FOLIAGE: Glossy green.
DESCRIPTION: A very uniform, symmetrical crab with moderate susceptibility to apple scab. Fireblight may be a problem in susceptible areas. Pink buds open to white and then orange fruit are produced in the fall.

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Slide 37
Malus x zurni 'Calocarpa'
Redbud Crabapple

SIZE: 20'H x 20'W.
HARDINESS: zone 3 to 7.
HABIT: Rounded ovate, spreading uniformly.
FOLIAGE: Green.
DESCRIPTION: Excellent specimen, one of the best crabs available, attractive red flower buds open to expose beautiful white blossoms; deep red fruits develop in the fall. Good disease resistance.

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Slide 38
Malus x zurni 'Calocarpa'
Redbud Crabapple

SIZE: 20'H x 20'W.
HARDINESS: zone 3 to 7.
HABIT: Rounded ovate, spreading uniformly.
FOLIAGE: Green.
DESCRIPTION: Excellent specimen, one of the best crabs available, attractive red flower buds open to expose beautiful white blossoms; deep red fruits develop in the fall. Good disease resistance.

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Slide 39
Syringa reticulata 'Ivory silk'
Japanese Tree Lilac

SIZE: 25'H x 20'W.
HARDINESS: zone 3 to 8.
HABIT: Ovate to rounded crown with spreading branches.
FOLIAGE: 2" - 5" simple dark green leaves without significant fall color.
DESCRIPTION: Selected for its small size and vigor, excellent for planting under utility lines and along streets, 6" - 10" clusters of creamy white flowers emerge in late spring, very showy!

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Slide 40
Syringa reticulata 'Ivory silk'
Japanese Tree Lilac

SIZE: 25'H x 20'W.
HARDINESS: zone 3 to 8.
HABIT: Ovate to rounded crown with spreading branches.
FOLIAGE: 2" - 5" simple dark green leaves without significant fall color.
DESCRIPTION: Selected for its small size and vigor, excellent for planting under utility lines and along streets, 6" - 10" clusters of creamy white flowers emerge in late spring, very showy!

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Trees with a Height of Thirty Feet or Greater.

- Acer x freemanli 'Jeffersred'
- Acer x freemanli 'Armstrong'
- Aesculus x camea 'Brioti'
- Alnus glutinosa
- Betula nigra 'Heritage'
- Carpinus betulus
- Celtis occidentalis
- Cercidiphyllum japonicum
- Corylus columa
- Fraxinus americana
- Fraxinus pennsylvanica
- Fraxinus quadrangulata
- Gingko biloba
- Gleditsia triancanthos
- Gymnociadus dioicus
- Linodendron tulipifera
- Ostry virginiana
- Pyrus calleryana
- Quercus bicolor
- Quercus imbricaria
- Quercus macrocarpa
- Quercus meuhllenbergii
- Quercus rubra
- Tilia americana
- Tilia cordata
- Tilia tomentosa
- Ulmus parvifolia
- Ulmus 'Pioneer'
- Ulmus 'Homestead'
- Zelkova serrata

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Slide 42
Acer x freemanii 'Jeffersred'
Autumn Blaze Freeman Maple

SIZE: 50'H x 40'W.
HARDINESS: zone 4 to 7.
HABIT: Dense, ovate to rounded outline.
FOLIAGE: Deep green turning a brilliant orange-red in fall.
DESCRIPTION: Long lasting fall color. Thin bark is easily damaged-not to be used in high traffic areas (pedestrian). Strong branching habit is less susceptible to storm damage than silver maple. Hybrid between red and silver maples.

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Slide 43

Acer x freemanii 'Jeffersred'

Autumn Blaze Freeman Maple

SIZE: 50'H x 40'W.
HARDINESS: zone 4 to 7.
HABIT: Dense, ovate to rounded outline.
FOLIAGE: Deep green turning a brilliant orange-red in fall.
DESCRIPTION: Long lasting fall color. Thin bark is easily damaged-not to be used in high traffic areas (pedestrian). Strong branching habit is less susceptible to storm damage than silver maple. Hybrid between red and silver maples.

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Slide 44
Acer x freemanii 'Armstrong'
Armstrong Freeman Maple

SIZE: 60'H x 20'W.
HARDINESS: zone 4 to 7.
HABIT: Upright columnar, spreading slightly with age.
FOLIAGE: Silver underside, yellow in fall.
DESCRIPTION: Very heat tolerant, Hybrid between Red and Silver maples. Adaptable over a wide range of climate and soil conditions. Will tolerate partial shade.

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Slide 45
Acer x freemanii 'Armstrong'
Armstrong Freeman Maple

SIZE: 60'H x 20'W.
HARDINESS: zone 4 to 7.
HABIT: Upright columnar, spreading slightly with age.
FOLIAGE: Silver underside, yellow in fall.
DESCRIPTION: Very heat tolerant, Hybrid between Red and Silver maples. Adaptable over a wide range of climate and soil conditions. Will tolerate partial shade.

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Slide 46
Acer x freemanii 'Armstrong'
Armstrong Freeman Maple

SIZE: 60'H x 20'W.
HARDINESS: zone 4 to 7.
HABIT: Upright columnar, spreading slightly with age.
FOLIAGE: Silver underside, yellow in fall.
DESCRIPTION: Very heat tolerant, Hybrid between Red and Silver maples. Adaptable over a wide range of climate and soil conditions. Will tolerate partial shade.

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Slide 47
Aesculus x carnea 'Briotii'
Red Horsechestnut

SIZE: 40'H x 35'W.
HARDINESS: zone 5 to 7.
HABIT: Broad rounded.
FOLIAGE: Dark green, no significant fall color.
DESCRIPTION: Showy, bright red 6" to 10" flower spikes. Hybrid between Red Buckeye and Horsechestnut; very tolerant of heat, drought, and most urban stresses.

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Slide 48
Alnus glutinosa
Common Alder

SIZE: 40'H x 30'W.
HARDINESS: zone 4 to 6.
HABIT: Loosely pyramidal to oval.
FOLIAGE: 2-4" nearly rounded green leaves, little or no fall color.
DESCRIPTION: 2"-3" male flowers (catkins) appear in fall and flower in spring, female catkins develop into small cone-like structures called strobilis - 1" - 1½". Tolerant of poor soils and will thrive in wet locations; also tolerant of dry urban conditions.

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Slide 49
Alnus glutinosa
Common Alder

SIZE: 40'H x 30'W.
HARDINESS: zone 4 to 6.
HABIT: Loosely pyramidal to oval.
FOLIAGE: 2-4" nearly rounded green leaves, little or no fall color.
DESCRIPTION: 2"-3" male flowers (catkins) appear in fall and flower in spring, female catkins develop into small cone-like structures called strobilis - 1" - 1½". Tolerant of poor soils and will thrive in wet locations; also tolerant of dry urban conditions.

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Slide 50
Alnus glutinosa
Common Alder

SIZE: 40'H x 30'W.
HARDINESS: zone 4 to 6.
HABIT: Loosely pyramidal to oval.
FOLIAGE: 2-4" nearly rounded green leaves, little or no fall color.
DESCRIPTION: 2"-3" male flowers (catkins) appear in fall and flower in spring, female catkins develop into small cone-like structures called strobilis - 1" - 1½". Tolerant of poor soils and will thrive in wet locations; also tolerant of dry urban conditions.

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Slide 51
Betula nigra 'Heritage'
Heritage River Birch

SIZE: 40'H x 30'W.
HARDINESS: zone 4 to 8.
HABIT: Conical-spreading, single trunk or clump form.
FOLIAGE: 2" glossy green leaves turning yellow in fall.
DESCRIPTION: This selection has an improved habit over the species. The crown is more uniform and is less irregular in appearance. Tolerant of bronze birch borer, cream colored peeling bark remains throughout the seasons.

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Slide 52
Betula nigra 'Heritage'
Heritage River Birch

SIZE: 40'H x 30'W.
HARDINESS: zone 4 to 8.
HABIT: Conical-spreading, single trunk or clump form.
FOLIAGE: 2" glossy green leaves turning yellow in fall.
DESCRIPTION: This selection has an improved habit over the species. The crown is more uniform and is less irregular in appearance. Tolerant of bronze birch borer, cream colored peeling bark remains throughout the seasons.

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Slide 53
Carpinus betulus
European Hornbeam

SIZE: 35'H x 20'W.
HARDINESS: zone 5 to 8.
HABIT: Dense, narrowly conical, becomes broader with age.
FOLIAGE: 2 ½" light green, slight yellowing in fall.
DESCRIPTION: Commonly used as hedge or screen, tolerates severe pruning, even shearing. No serious disease or pest problems, tolerates pollution and poor soil.

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Slide 54
Celtis occidentalis
Hackberry

SIZE: 50'H x 40'W.
HARDINESS: zone 4 to 8.
HABIT: Broad rounded crown.
FOLIAGE: Leathery, deep green leaves turning yellow in fall.
DESCRIPTION: Tolerates alkaline soil, air pollution, salt, and drought. Large stately looking tree excellent for street plantings.

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Slide 55
Celtis occidentalis
Hackberry

SIZE: 50'H x 40'W.
HARDINESS: zone 4 to 8.
HABIT: Broad rounded crown.
FOLIAGE: Leathery, deep green leaves turning yellow in fall.
DESCRIPTION: Tolerates alkaline soil, air pollution, salt, and drought. Large stately looking tree excellent for street plantings.

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Slide 56
Cercidiphyllum japonicum
Katsura Tree

SIZE: 50'H x 35'W.
HARDINESS: zone 5 to 8.
HABIT: Conical becoming rounded with age.
FOLIAGE: 2" to 4" heart shaped leaves emerging purple in spring and turning blue green and then yellow-orange in fall.
DESCRIPTION: Relatively resistant to diseases and pests, attractively foliage throughout the growing season. Stressed in poor or compacted soil and not drought tolerant.

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Slide 57
Cercidiphyllum japonicum
Katsura Tree

SIZE: 50'H x 35'W.
HARDINESS: zone 5 to 8.
HABIT: Conical becoming rounded with age.
FOLIAGE: 2" to 4" heart shaped leaves emerging purple in spring and turning blue green and then yellow-orange in fall.
DESCRIPTION: Relatively resistant to diseases and pests, attractively foliage throughout the growing season. Stressed in poor or compacted soil and not drought tolerant.

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Slide 58
Cercidiphyllum japonicum
Katsura Tree

SIZE: 50'H x 35'W.
HARDINESS: zone 5 to 8.
HABIT: Conical becoming rounded with age.
FOLIAGE: 2" to 4" heart shaped leaves emerging purple in spring and turning blue green and then yellow-orange in fall.
DESCRIPTION: Relatively resistant to diseases and pests, attractively foliage throughout the growing season. Stressed in poor or compacted soil and not drought tolerant.

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Slide 59
Corylus colurna
Turkish Filbert

SIZE: 50'H x 30'W.
HARDINESS: zone 5 to 7.
HABIT: Conical, usually symmetrical.
FOLIAGE: 3" to 5" deep green leaves, dull yellow to purple in fall.
DESCRIPTION: Tolerates urban stress i.e. drought, pollution, salt etc., maintenance free, stately looking tree usually symmetrical, the nuts attract wildlife.

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Slide 60
Corylus colurna
Turkish Filbert

SIZE: 50'H x 30'W.
HARDINESS: zone 5 to 7.
HABIT: Conical, usually symmetrical.
FOLIAGE: 3" to 5" deep green leaves, dull yellow to purple in fall.
DESCRIPTION: Tolerates urban stress i.e. drought, pollution, salt etc., maintenance free, stately looking tree usually symmetrical, the nuts attract wildlife.

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Slide 61
Fraxinus americana 'Autumn Applause'
Autumn Applause White Ash

SIZE: 55'H x 40'W.
HARDINESS: zone 5 to 8.
HABIT: Broadly ovate to rounded crown.
FOLIAGE: 3" medium green leaflets turning wine-red in fall (atypical of the species).
DESCRIPTION: Attractive street tree with minimal seeds. Excellent fall color, will tolerate partial shade. Susceptible to borers.

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Slide 62
Fraxinus americana 'Autumn Applause'
Autumn Applause White Ash

SIZE: 55'H x 40'W.
HARDINESS: zone 5 to 8.
HABIT: Broadly ovate to rounded crown.
FOLIAGE: 3" medium green leaflets turning wine-red in fall (atypical of the species).
DESCRIPTION: Attractive street tree with minimal seeds. Excellent fall color, will tolerate partial shade. Susceptible to borers.

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Slide 63
Fraxinus americana 'Autumn Applause'
Autumn Applause White Ash

SIZE: 55'H x 40'W.
HARDINESS: zone 5 to 8.
HABIT: Broadly ovate to rounded crown.
FOLIAGE: 3" medium green leaflets turning wine-red in fall (atypical of the species).
DESCRIPTION: Attractive street tree with minimal seeds. Excellent fall color, will tolerate partial shade. Susceptible to borers.

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Slide 64
Fraxinus americana 'Autumn Purple'
Autumn Purple Ash

SIZE: 50'H x 45'W.
HARDINESS: zone 3 to 8.
HABIT: Broadly ovate, crown not as compact as *F. americana* 'Autumn Applause'.
FOLIAGE: 3" medium green leaflets turning orange-maroon in fall.
DESCRIPTION: Vigorous and attractive street tree often overused. Sensitive to drought and will tolerate partial shade.

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Slide 65
Fraxinus americana 'Autumn Purple'
Autumn Purple Ash

SIZE: 50'H x 45'W.
HARDINESS: zone 3 to 8.
HABIT: Broadly ovate, crown not as compact as *F. americana* 'Autumn Applause'.
FOLIAGE: 3" medium green leaflets turning orange-maroon in fall.
DESCRIPTION: Vigorous and attractive street tree often overused. Sensitive to drought and will tolerate partial shade.

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Slide 66
Fraxinus pennsylvanica 'Patmore'
Patmore Green Ash

SIZE: 55'H x 45'W.
HARDINESS: zone 3 to 8.
HABIT: Broadly ovate with medium texture.
FOLIAGE: 3" glossy green leaflets turning yellow in fall and persisting longer than most other *Fraxinus*.
DESCRIPTION: Excellent street tree tolerant of drought, salt, and pollution. Very hardy in colder regions.

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Slide 67
Fraxinus pennsylvanica 'Patmore'
Patmore Green Ash

SIZE: 55'H x 45'W.
HARDINESS: zone 3 to 8.
HABIT: Broadly ovate with medium texture.
FOLIAGE: 3" glossy green leaflets turning yellow in fall and persisting longer than most other *Fraxinus*.
DESCRIPTION: Excellent street tree tolerant of drought, salt, and pollution. Very hardy in colder regions.

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Slide 68
Fraxinus pennsylvanica 'Summit'
Summit Green Ash

SIZE: 55'H x 45'W.
HARDINESS: zone 3 to 8.
HABIT: Narrowly ovate becoming broader with age.
FOLIAGE: 3" medium green leaflets turning golden yellow in early fall.
DESCRIPTION: A vigorous selection with thick durable bark, which makes it less susceptible to mechanical damage. Excellent street tree tolerant of many adverse/urban conditions.

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Slide 69
Fraxinus pennsylvanica 'Summit'
Summit Green Ash

SIZE: 55'H x 45'W.
HARDINESS: zone 3 to 8.
HABIT: Narrowly ovate becoming broader with age.
FOLIAGE: 3" medium green leaflets turning golden yellow in early fall.
DESCRIPTION: A vigorous selection with thick durable bark, which makes it less susceptible to mechanical damage. Excellent street tree tolerant of many adverse/urban conditions

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Slide 70
Fraxinus pennsylvanica 'Summit'
Summit Green Ash

SIZE: 55'H x 45'W.
HARDINESS: zone 3 to 8.
HABIT: Narrowly ovate becoming broader with age.
FOLIAGE: 3" medium green leaflets turning golden yellow in early fall.
DESCRIPTION: A vigorous selection with thick durable bark, which makes it less susceptible to mechanical damage. Excellent street tree tolerant of many adverse/urban conditions.

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Slide 71
Fraxinus quadrangulato
Blue Ash

SIZE: 65'H x 35'W.
HARDINESS: zone 4 to 7.
HABIT: Narrow, spreading, irregular.
FOLIAGE: 3" to 5" shiny green leaflets turning yellow to bronze in fall.
DESCRIPTION: One of the best Ash trees for drought. A Midwest native that will tolerate high soil pH and partial shade.

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Slide 72
Fraxinus quadrangulato
Blue Ash

SIZE: 65'H x 35'W.
HARDINESS: zone 4 to 7.
HABIT: Narrow, spreading, irregular.
FOLIAGE: 3" to 5" shiny green leaflets turning yellow to bronze in fall.
DESCRIPTION: One of the best Ash trees for drought. A Midwest native that will tolerate high soil pH and partial shade.

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Slide 73
Gingko biloba
Gingko

SIZE: 60'H x 35'W.
HARDINESS: zone 4 to 8.
HABIT: Spreading with an irregular outline.
FOLIAGE: 2" to 3" fan shaped, produced on spur shoots, golden yellow in fall.
DESCRIPTION: Thrives in a wide range of soils, tolerant of urban stresses, beautiful fall color. Only fruitless males should be selected. 'Princeton Sentry' is a narrow, columnar, male form excellent for street planting.

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Slide 74
Gingko biloba
Gingko

SIZE: 60'H x 35'W.
HARDINESS: zone 4 to 8.
HABIT: Spreading with an irregular outline.
FOLIAGE: 2" to 3" fan shaped, produced on spur shoots, golden yellow in fall.
DESCRIPTION: Thrives in a wide range of soils, tolerant of urban stresses, beautiful fall color. Only fruitless males should be selected. 'Princeton Sentry' is a narrow, columnar, male form excellent for street planting.

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Slide 75
Gingko biloba
Gingko

SIZE: 60'H x 35'W.
HARDINESS: zone 4 to 8.
HABIT: Spreading with an irregular outline.
FOLIAGE: 2" to 3" fan shaped, produced on spur shoots, golden yellow in fall.
DESCRIPTION: Thrives in a wide range of soils, tolerant of urban stresses, beautiful fall color. Only fruitless males should be selected. 'Princeton Sentry' is a narrow, columnar, male form excellent for street planting.

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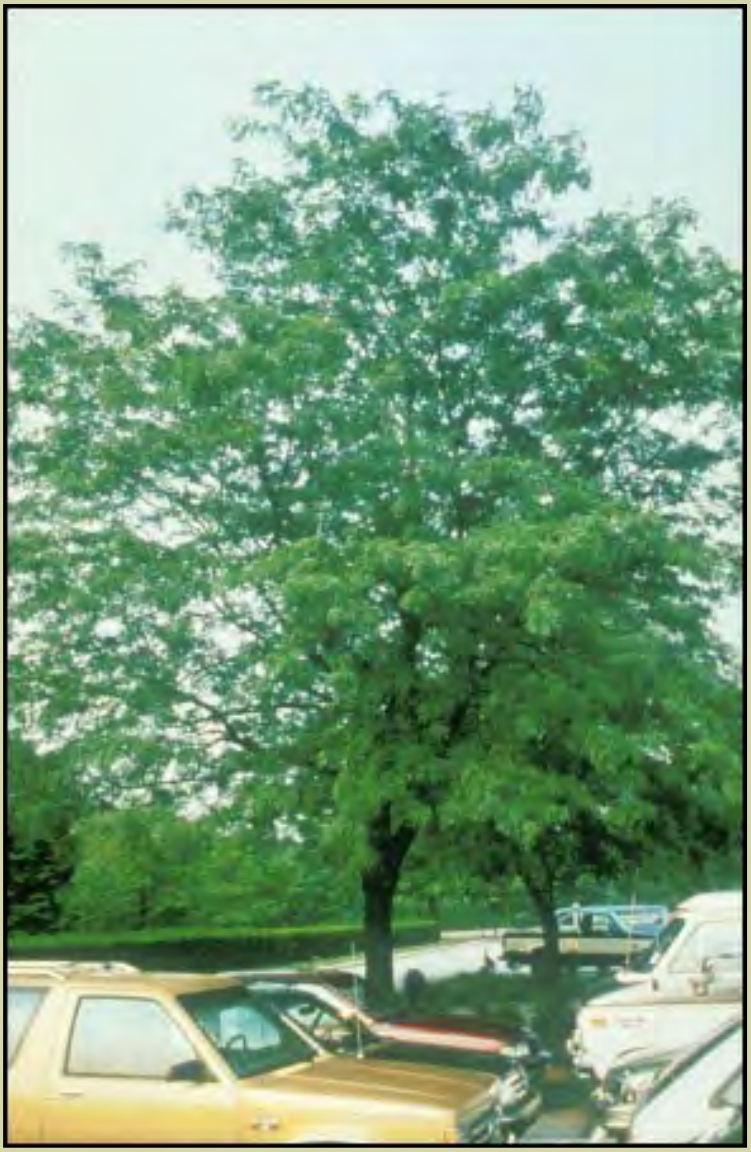

Slide 76
Gleditsia triacanthos 'Shademaster'
Shademaster Honeylocust

SIZE: 60'H X 40'W.
HARDINESS: zone 4 to 8.
HABIT: Broad, open, spreading with ascending branches.
FOLIAGE: Pinnately compound, 1 to 1½" leaflets turning yellow in fall.
DESCRIPTION: An excellent fast growing street tree with essentially no fruit, dark green leaves. One of the best honeylocuts for urban use.

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Slide 77
Gleditsia triacanthos 'Skycole'
Skyline Honeylocust

SIZE: 65'H x 55'W.
HARDINESS: zone 4 to 9.
HABIT: Broad ovate to pyramidal.
FOLIAGE: 2" to 3" bluish-green, pinnately compound.
DESCRIPTION: Fast growth rate, provides dappled shade for understory plantings, good street tree; one which turf will thrive under. Is often overused which may be causing severe insect problems.

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Slide 78
Gleditsia triacanthos 'Skycole'
Skyline Honeylocust

SIZE: 65'H x 55'W.
HARDINESS: zone 4 to 9.
HABIT: Broad ovate to pyramidal.
FOLIAGE: 2" to 3" bluish-green, pinnately compound.
DESCRIPTION: Fast growth rate, provides dappled shade for understory plantings, good street tree; one which turf will thrive under. Is often overused which may be causing severe insect problems.

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Slide 79
Gleditsia triacanthos 'Skycole'
Skyline Honeylocust

SIZE: 65'H x 55'W.
HARDINESS: zone 4 to 9.
HABIT: Broad ovate to pyramidal.
FOLIAGE: 2" to 3" bluish-green, pinnately compound.
DESCRIPTION: Fast growth rate, provides dappled shade for understory plantings, good street tree; one which turf will thrive under. Is often overused which may be causing severe insect problems.

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Slide 80
Gymnocladus dioicus
Kentucky Coffeetree

SIZE: 70'H x 50'W.
HARDINESS: zone 4 to 9.
HABIT: Large, irregular ovate.
FOLIAGE: Bipinnately compound, subtle yellow fall color.
DESCRIPTION: A tree for large scale properties i.e. parks and golf courses. Very tolerant of air pollution. Seed pods produced on the female are large, up to 8" long, and can be a litter problem.

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Slide 81
Gymnocladus dioicus
Kentucky Coffeetree

SIZE: 70'H x 50'W.
HARDINESS: zone 4 to 9.
HABIT: Large, irregular ovate.
FOLIAGE: Bipinnately compound, subtle yellow fall color.
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Slide 82
Gymnocladus dioicus
Kentucky Coffeetree

SIZE: 70'H x 50'W.
HARDINESS: zone 4 to 9.
HABIT: Large, irregular ovate.
FOLIAGE: Bipinnately compound, subtle yellow fall color.
DESCRIPTION: A tree for large scale properties i.e. parks and golf courses. Very tolerant of air pollution. Seed pods produced on the female are large, up to 8" long, and can be a litter problem.

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Slide 83
Liriodendron tulipifera
Tuliptree

SIZE: 80'H x 40'W.
HARDINESS: zone 4 to 9.
HABIT: Large, conical to ovate.
FOLIAGE: 3" to 8" bright green, golden yellow in fall.
DESCRIPTION: A large tree for large-scale projects. Green-yellow tulip like flowers appear on mature specimens in late spring, usually high atop the tree. Thin bark can be easily damaged.

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Slide 84
Liriodendron tulipifera
Tuliptree

SIZE: 80'H x 40'W.
HARDINESS: zone 4 to 9.
HABIT: Large, conical to ovate.
FOLIAGE: 3" to 8" bright green, golden yellow in fall.
DESCRIPTION: A large tree for large-scale projects. Green-yellow tulip like flowers appear on mature specimens in late spring, usually high atop the tree. Thin bark can be easily damaged.

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Slide 85
Ostrya virginiana
Hophornbeam

SIZE: 35'H x 20'W.
HARDINESS: zone 4 to 8.
HABIT: Conical becoming more rounded and globose with age.
FOLIAGE: 2" to 5" simple green turning yellow in fall.
DESCRIPTION: An attractive medium size tree with gray scaley bark, tolerates shade and is grown as an understory tree. Thrives in urban settings, clusters of green nutlets resembling the fruit of the hop vine appear in summer

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Slide 86
Ostrya virginiana
Hophornbeam

SIZE: 35'H x 20'W.
HARDINESS: zone 4 to 8.
HABIT: Conical becoming more rounded and globose with age.
FOLIAGE: 2" to 5" simple green turning yellow in fall.
DESCRIPTION: An attractive medium size tree with gray scaley bark, tolerates shade and is grown as an understory tree. Thrives in urban settings, clusters of green nutlets resembling the fruit of the hop vine appear in summer

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Slide 87
Pyrus calleryana 'Aristocrat'
Aristocrat Pear

SIZE: 40'H x 30'W.
HARDINESS: zone 5 to 9.
HABIT: Broadly conical with an open habit.
FOLIAGE: 3" to 4" lustrous dark green leaves with a wavy margin.
DESCRIPTION: Superior structure compared to *Pyrus calleyano* 'Bradford' makes it less susceptible to wind breakage, also requires less pruning. Tolerates pollution and drought, abundant white blossoms appear in early spring.

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Slide 88
Pyrus calleryana 'Autumn Blaze'
Autumnblaze Callery Pear

SIZE: 35'H x 25'W.
HARDINESS: zone 5 to 8.
HABIT: Ovate, becoming irregular with age.
FOLIAGE: 2" to 3" glossy green leaves turning red-orange in early fall.
DESCRIPTION: Another selection with superior branching structure, adaptable to a wide range of soils. Pink blossoms fading to white and excellent fall color.

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Slide 89
Pyrus calleryana 'Autumn Blaze'
Autumnblaze Callery Pear

SIZE: 35'H x 25'W.
HARDINESS: zone 5 to 8.
HABIT: Ovate, becoming irregular with age.
FOLIAGE: 2" to 3" glossy green leaves turning red-orange in early fall.
DESCRIPTION: Another selection with superior branching structure, adaptable to a wide range of soils. Pink blossoms fading to white and excellent fall color.

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Slide 90
Pyrus calleryana 'Chanticleer'
Cleveland Select Callery Pear

SIZE: 35'H x 15'W.
HARDINESS: zone 5 to 8.
HABIT: Narrow, conical.
FOLIAGE: 2" - 3" glossy green leaves turning gold-red to plum in fall.
DESCRIPTION: Tolerant of drought and pollution, suitable for locations where space to spread is limited.

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Slide 91
Pyrus calleryana 'Chanticleer'
Cleveland Select Callery Pear

SIZE: 35'H x 15'W.
HARDINESS: zone 5 to 8.
HABIT: Narrow, conical.
FOLIAGE: 2" - 3" glossy green leaves turning gold-red to plum in fall.
DESCRIPTION: Tolerant of drought and pollution, suitable for locations where space to spread is limited.

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Slide 92
Quercus bicolor
Swamp White Oak

SIZE: 65'H x 60'W.
HARDINESS: zone 4 to 7.
HABIT: Rounded and broad with an open crown, often as wide as tall.
FOLIAGE: 4" - 8" flat green, pale green undersides, rounded lobes, and yellow-brown fall color.
DESCRIPTION: Tolerant of drought, soil compaction and salt, transplants easier than other oaks. The bark on younger plants is gray and scaley, becoming deeply furrowed with age.

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Slide 93
Quercus bicolor
Swamp White Oak

SIZE: 65'H x 60'W.
HARDINESS: zone 4 to 7.
HABIT: Rounded and broad with an open crown, often as wide as tall.
FOLIAGE: 4" - 8" flat green, pale green undersides, rounded lobes, and yellow-brown fall color.
DESCRIPTION: Tolerant of drought, soil compaction and salt, transplants easier than other oaks. The bark on younger plants is gray and scaley, becoming deeply furrowed with age.

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Slide 94
Quercus imbricaria
Shingle Oak

SIZE: 55'H x 45'W.
HARDINESS: zone 4 to 7.
HABIT: Conical becoming broad and rounded with age.
FOLIAGE: 3" - 6" shiny dark green leaves turning yellow-brown to bronze in fall.
DESCRIPTION: Good street tree tolerant of drought and other urban stresses, slow growth rate, worthy of being used more often.

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Slide 95
Quercus imbricaria
Shingle Oak

SIZE: 55'H x 45'W.
HARDINESS: zone 4 to 7.
HABIT: Conical becoming broad and rounded with age.
FOLIAGE: 3" - 6" shiny dark green leaves turning yellow-brown to bronze in fall.
DESCRIPTION: Good street tree tolerant of drought and other urban stresses, slow growth rate, worthy of being used more often.

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Slide 96
Quercus macrocarpa
Bur Oak

SIZE: 75'H x 65'W.
HARDINESS: zone 3 to 8.
HABIT: Ovate, becoming broad and rounded with age.
FOLIAGE: 5" - 8" oblong with rounded lobes, glossy green with pale underside, yellow brown in fall.
DESCRIPTION: A large, durable tree tolerant of urban stresses and also of poor soils, will adapt to acid or alkaline soil, suitable for parks, golf courses, and wherever adequate growing space is available.

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Slide 97
Quercus macrocarpa
Bur Oak

SIZE: 75'H x 65'W.
HARDINESS: zone 3 to 8.
HABIT: Ovate, becoming broad and rounded with age.
FOLIAGE: 5" - 8" oblong with rounded lobes, glossy green with pale underside, yellow brown in fall.
DESCRIPTION: A large, durable tree tolerant of urban stresses and also of poor soils, will adapt to acid or alkaline soil, suitable for parks, golf courses, and wherever adequate growing space is available.

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Slide 98
Quercus macrocarpa
Bur Oak

SIZE: 75'H x 65'W.
HARDINESS: zone 3 to 8.
HABIT: Ovate, becoming broad and rounded with age.
FOLIAGE: 5" - 8" oblong with rounded lobes, glossy green with pale underside, yellow brown in fall.
DESCRIPTION: A large, durable tree tolerant of urban stresses and also of poor soils, will adapt to acid or alkaline soil, suitable for parks, golf courses, and wherever adequate growing space is available.

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Slide 99
Quercus meuhllenbergii
Chinkapin Oak

SIZE: 65'H x 65'W.
HARDINESS: zone 5 to 8.
HABIT: Rounded with an open crown, often wider than tall.
FOLIAGE: 4" - 6" oblong-lanceolate leaves, shiny green turning yellow-brown to orange in fall.
DESCRIPTION: Good shade and specimen tree for large areas, tolerates poor soils, oak wilt may be a problem. As with all oaks, acorns can cause litter problem.

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Slide 100
Quercus meuhllenbergii
Chinkapin Oak

SIZE: 65'H x 65'W.
HARDINESS: zone 5 to 8.
HABIT: Rounded with an open crown, often wider than tall.
FOLIAGE: 4" - 6" oblong-lanceolate leaves, shiny green turning yellow-brown to orange in fall.
DESCRIPTION: Good shade and specimen tree for large areas, tolerates poor soils, oak wilt may be a problem. As with all oaks, acorns can cause litter problem.

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Slide 101
Quercus rubra
Red Oak

SIZE: 70'H x 50'W.
HARDINESS: zone 3 to 8.
HABIT: Dense rounded crown with ascending branches.
FOLIAGE: 5" - 9" shiny dark green leaves turning red-russet in fall.
DESCRIPTION: Excellent street tree tolerant of pollution, also good shade and specimen tree. Chlorosis may be a problem on alkaline soils.

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Slide 102
Quercus rubra
Red Oak

SIZE: 70'H x 50'W.
HARDINESS: zone 3 to 8.
HABIT: Dense rounded crown with ascending branches.
FOLIAGE: 5" - 9" shiny dark green leaves turning red-russet in fall.
DESCRIPTION: Excellent street tree tolerant of pollution, also good shade and specimen tree. Chlorosis may be a problem on alkaline soils.

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Slide 103
Quercus rubra
Red Oak

SIZE: 70'H x 50'W.
HARDINESS: zone 3 to 8.
HABIT: Dense rounded crown with ascending branches.
FOLIAGE: 5" - 9" shiny dark green leaves turning red-russet in fall.
DESCRIPTION: Excellent street tree tolerant of pollution, also good shade and specimen tree. Chlorosis may be a problem on alkaline soils.

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Slide 104
Tilia americana 'Redmond'
Redmond American Linden

SIZE: 60'H x 35'W.
HARDINESS: zone 3 to 7.
HABIT: Pyramidal becoming broader with age.
FOLIAGE: 4" - 8" light green simple leaves.
DESCRIPTION: Large tree for parks and golf courses, strong branching habit with little risk of storm damage, adaptable to urban conditions, pale yellow flower spikes in June.

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Slide 105
Tilia americana 'Redmond'
Redmond American Linden

SIZE: 60'H x 35'W.
HARDINESS: zone 3 to 7.
HABIT: Pyramidal becoming broader with age.
FOLIAGE: 4" - 8" light green simple leaves.
DESCRIPTION: Large tree for parks and golf courses, strong branching habit with little risk of storm damage, adaptable to urban conditions, pale yellow flower spikes in June.

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Slide 106
Tilia cordata 'Glenleven'
Glenleven Littleleaf Linden

SIZE: 60'H x 40'W.
HARDINESS: zone 3 to 8.
HABIT: Conical, nearly symmetrical.
FOLIAGE: 3" - 4" dark green leaves.
DESCRIPTION: Selected for its vigor and improved branching habit, tolerable of a wide range of soils but somewhat sensitive to drought and salt, good specimen tree and suitable for areas where adequate root space is available.

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Slide 107
Tilia cordata 'Glenleven'
Glenleven Littleleaf Linden

SIZE: 60'H x 40'W.
HARDINESS: zone 3 to 8.
HABIT: Conical, nearly symmetrical.
FOLIAGE: 3" - 4" dark green leaves.
DESCRIPTION: Selected for its vigor and improved branching habit, tolerable of a wide range of soils but somewhat sensitive to drought and salt, good specimen tree and suitable for areas where adequate root space is available.

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Slide 108
Tilia tomentosa
Silver Linden

SIZE: 65'H x 50'W.
HARDINESS: zone 4 to 8.
HABIT: Pyramidal, becoming broader with age.
FOLIAGE: 3" lustrous dark green, silver undersides show brightly when blowing in the wind.
DESCRIPTION: Tolerates heat, drought, and pollution, excellent street tree and ornamental shade tree.

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Slide 109
Tilia tomentosa
Silver Linden

SIZE: 65'H x 50'W.
HARDINESS: zone 4 to 8.
HABIT: Pyramidal, becoming broader with age.
FOLIAGE: 3" lustrous dark green, silver undersides show brightly when blowing in the wind.
DESCRIPTION: Tolerates heat, drought, and pollution, excellent street tree and ornamental shade tree.

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Slide 110
Ulmus parvifolia
Lacebark Elm

SIZE: 50'H x 35'W.
HARDINESS: zone 5 to 9.
HABIT: Ovate to vase shaped.
FOLIAGE: 1" - 2 " dark green leaves turning yellow-brown in fall.
DESCRIPTION: Extremely tolerant of urban stress and resistant to Dutch elm Disease (DED). Thrives under drought conditions, and will adopt to alkaline soil, relatively free of pests and diseases.

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Slide 111
Ulmus parvifolia
Lacebark Elm

SIZE: 50'H x 35'W.
HARDINESS: zone 5 to 9.
HABIT: Ovate to vase shaped.
FOLIAGE: 1" - 2 " dark green leaves turning yellow-brown in fall.
DESCRIPTION: Extremely tolerant of urban stress and resistant to Dutch elm Disease (DED). Thrives under drought conditions, and will adopt to alkaline soil, relatively free of pests and diseases.

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Slide 112
Ulmus parvifolia
Lacebark Elm

SIZE: 50'H x 35'W.
HARDINESS: zone 5 to 9.
HABIT: Ovate to vase shaped.
FOLIAGE: 1" - 2 " dark green leaves turning yellow-brown in fall.
DESCRIPTION: Extremely tolerant of urban stress and resistant to Dutch elm Disease (DED). Thrives under drought conditions, and will adopt to alkaline soil, relatively free of pests and diseases.

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Slide 113
Ulmus 'Pioneer'
Pioneer Hybrid Elm

SIZE: 50'H x 50'W.
HARDINESS: zone 5 to 8.
HABIT: Globose, often as wide as tall.
FOLIAGE: 3" - 4" dark green leaves turning yellow in fall.
DESCRIPTION: Shows high resistance to DED, tolerant of pollution and other urban stresses, fast grower with strong branching habit.

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Slide 114
Ulmus 'Pioneer'
Pioneer Hybrid Elm

SIZE: 50'H x 50'W.
HARDINESS: zone 5 to 8.
HABIT: Globose, often as wide as tall.
FOLIAGE: 3" - 4" dark green leaves turning yellow in fall.
DESCRIPTION: Shows high resistance to DED, tolerant of pollution and other urban stresses, fast grower with strong branching habit.

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Slide 115
Ulmus 'Homestead'

Homestead Hybrid Elm

SIZE: 60'H x 35'W.
HARDINESS: zone 5 to 8.
HABIT: Conical, narrow, branches tend to arch with age.
FOLIAGE: 3" - 4" dark green leaves turning yellow in fall.
DESCRIPTION: High resistance to DED and tolerant of most urban conditions i.e. salt, pollution compacted soil, alkaline soil, drought, narrower in habit than other *Ulmus* hybrids.

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Slide 116
Ulmus 'Homestead'
Homestead Hybrid Elm

SIZE: 60'H x 35'W.
HARDINESS: zone 5 to 8.
HABIT: Conical, narrow, branches tend to arch with age.
FOLIAGE: 3" - 4" dark green leaves turning yellow in fall.
DESCRIPTION: High resistance to DED and tolerant of most urban conditions i.e. salt, pollution compacted soil, alkaline soil, drought, narrower in habit than other *Ulmus* hybrids.

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Slide 117
Zelkova serrata
Green Vase Japanese Zelkova

SIZE: 65'H x 50'W.
HARDINESS: zone 5 to 8.
HABIT: Broad, vase shaped habit with rounded outline.
FOLIAGE: 1" - 3" bright green leaves turning bronze-red in fall.
DESCRIPTION: A fast growing, graceful tree suitable as a replacement for American Elms, tolerant of urban conditions, under extreme conditions splitting can occur at the crotch because of the narrow angle, resistant to DED. The cultivar 'Green Vase' is an excellent selection.

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Slide 118
Zelkova serrata
Green Vase Japanese Zelkova

SIZE: 65'H x 50'W.
HARDINESS: zone 5 to 8.
HABIT: Broad, vase shaped habit with rounded outline.
FOLIAGE: 1" - 3" bright green leaves turning bronze-red in fall.
DESCRIPTION: A fast growing, graceful tree suitable as a replacement for American Elms, tolerant of urban conditions, under extreme conditions splitting can occur at the crotch because of the narrow angle, resistant to DED. The cultivar 'Green Vase' is an excellent selection.

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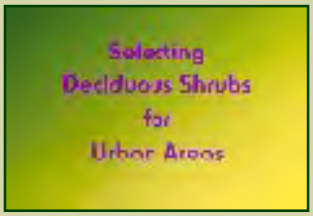

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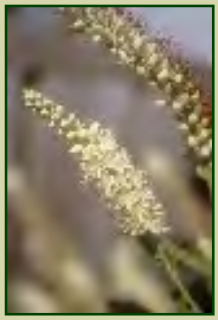
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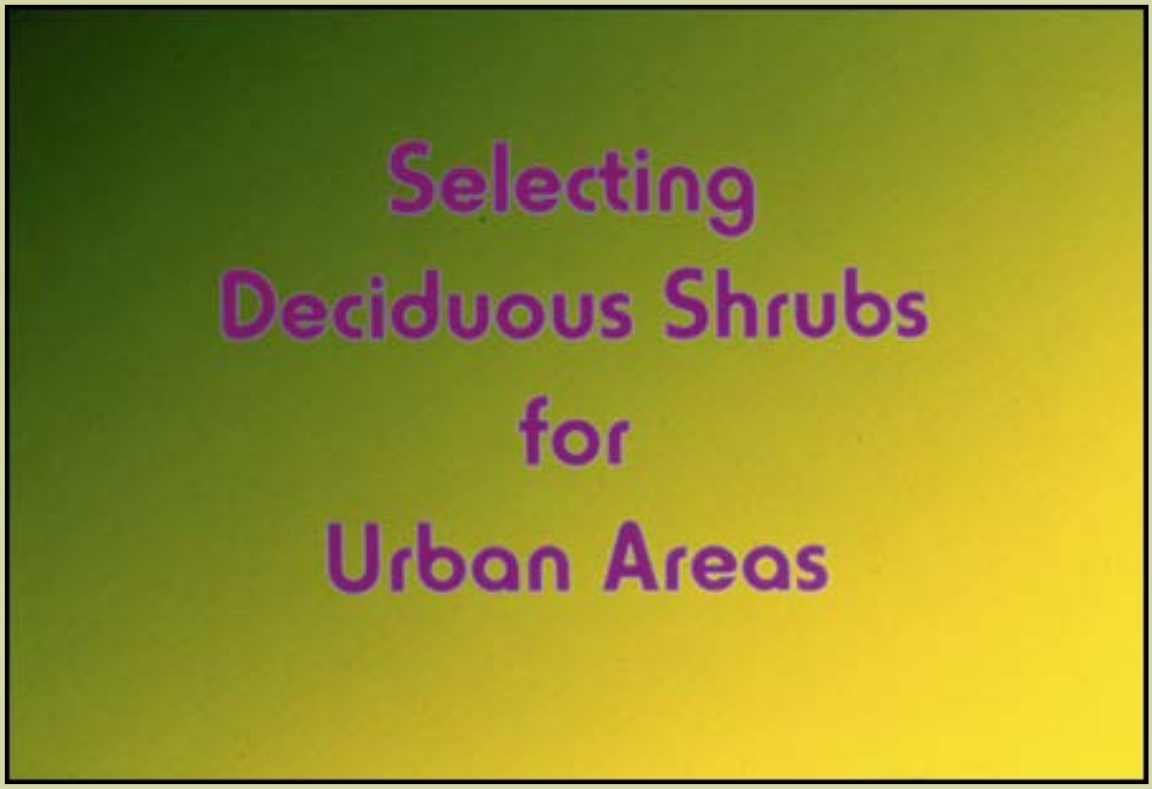

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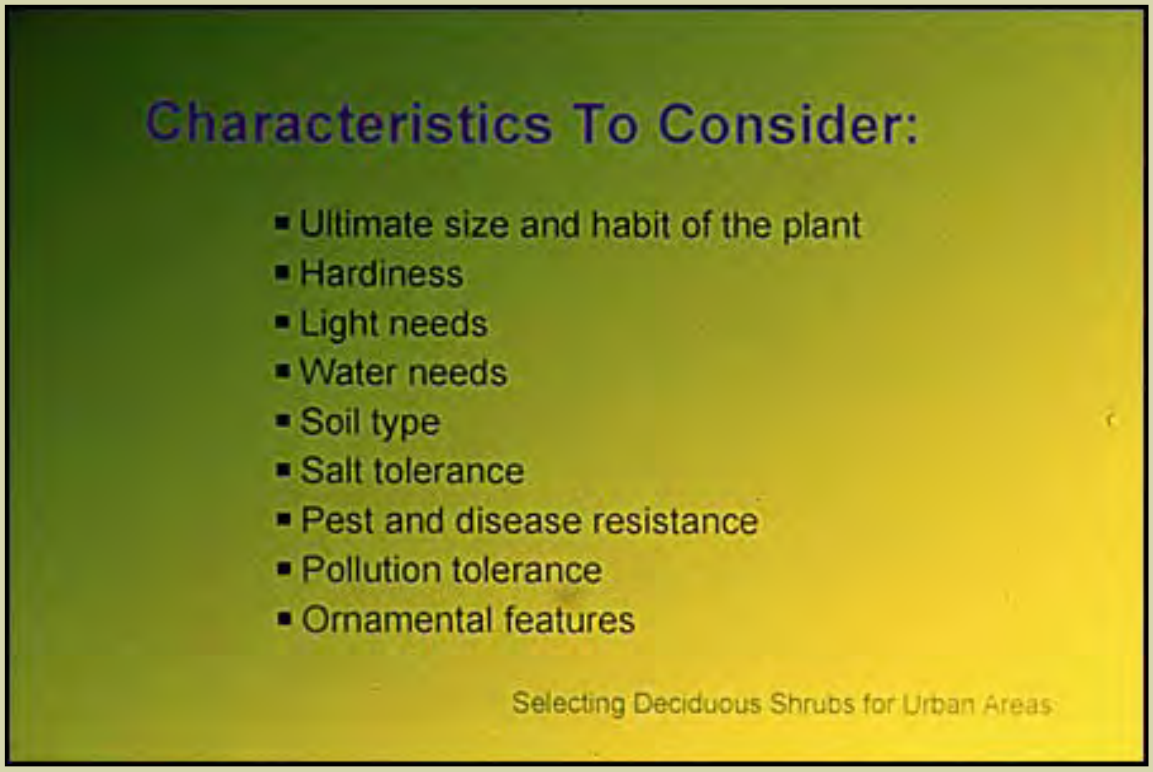

Slide 2

Characteristic to Consider:

- Ultimate size and habit of the plant
- Hardiness
- Light needs
- Water needs
- Soil type
- Salt tolerance
- Pest and disease resistance
- Pollution tolerance
- Ornamental features

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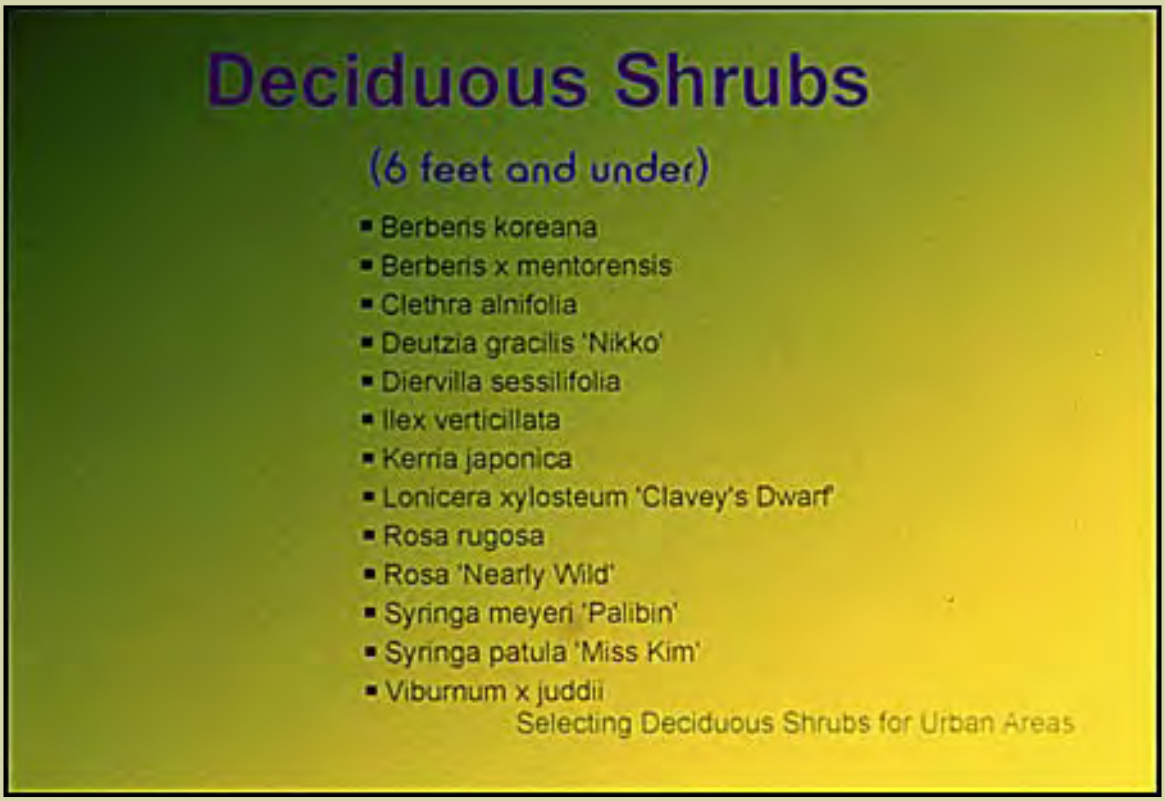

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Shrubs With a Height of Six Feet or Less.

- Berberis koreana
- Berberis x mentorensis
- Clethra ainifolia
- Deutzia gracilis 'Nikko'
- Diervilla sessilifolia
- IIex verticillata
- Kerria japonica
- Lonicera xylosteum 'Clavey's Dwarf'
- Rosa rugosa
- Rosa 'Nearly Wild'
- Syringa meyeri 'Palibin'
- Syringa patula 'Miss Kim'
- Viburnum x juddii

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Slide 4
Berberis koreana
Korean Barberry

Size: 5'H x 6'W.
Hardiness: zone 4 to 8.
Habit: Compact, ovate, slightly spreading, thorns.
Flowers/fruit: Drooping yellow clusters (racemes) 3" to 4" long, appear in spring. Bright red, ¼" oblong berries appear in clusters 3" to 4" long and often persist into the winter.
Description: The most attractIIe barberry in flower. Deep red fall color persists late into the season. Plants tolerate light shade, and adapt to a wide range of soil pH.

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Slide 5
Berberis koreana
Korean Barberry

Size: 5'H x 6'W.
Hardiness: zone 4 to 8.
Habit: Compact, ovate, slightly spreading, thorns.
Flowers/fruit: Drooping yellow clusters (racemes) 3" to 4" long, appear in spring. Bright red, ¼" oblong berries appear in clusters 3" to 4" long and often persist into the winter.
Description: The most attractIIe barberry in flower. Deep red fall color persists late into the season. Plants tolerate light shade, and adapt to a wide range of soil pH.

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Slide 6
Berberis x mentorensis
Mentor Barberry

Size: 5'H x 5'W Hardiness: zone 5 to 8.
Habit: Rounded with stiff, upright branches.
Flowers/fruit: Small, yellow flowers appear in mid spring, not as showy as other Berberis but attractIIe in their own right.
Description: Uniform growth makes this an excellent hedge for the Midwest. Mentor barberry is tolerant of drought and extreme heat, withstands severe pruning, and because of abundant thorns, it serves as an ideal barrier. May be semievergreen.

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Slide 7
Berberis x mentorensis
Mentor Barberry

Size: 5'H x 5'W Hardiness: zone 5 to 8.
Habit: Rounded with stiff, upright branches.
Flowers/fruit: Small, yellow flowers appear in mid spring, not as showy as other Berberis but attractIIe in their own right.
Description: Uniform growth makes this an excellent hedge for the Midwest. Mentor barberry is tolerant of drought and extreme heat, withstands severe pruning, and because of abundant thorns, it serves as an ideal barrier. May be semievergreen.

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Slide 8
Cephalanthus occidentalis
Buttonbush

Size: 6'H x 6'W.
Hardiness: zone 4 to 7.
Habit: Rounded with a slightly open crown.
Flowers/fruit: One inch white, globular flowers occur in midsummer, green nutlets ripen during late summer in place of the flowers.
Description: A plant adapted to wet sites and naturalized areas, valued for its late summer flowers, will not tolerate dry sites.

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Slide 9
Cephalanthus occidentalis
Buttonbush

Size: 6'H x 6'W.
Hardiness: zone 4 to 7.
Habit: Rounded with a slightly open crown.
Flowers/fruit: One inch white, globular flowers occur in midsummer, green nutlets ripen during late summer in place of the flowers.
Description: A plant adapted to wet sites and naturalized areas, valued for its late summer flowers, will not tolerate dry sites.

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Slide 10
Clethra alnifolia
Summersweet Clethra

Size: 3'-6'H x 3'-6'W.
Hardiness: zone 5 to 8.
Habit: Broad, rounded to ovate, clump forming.
Flowers/fruit: Long pink or white flower spikes 2" to 6" long appear in mid summer, a time when few other shrubs are in bloom.
Description: Glossy green foliage and aromatic flowers, tolerates sun or shade and prefers moist soil, will suffer in alkaline soil.

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Slide 11
Clethra alnifolia
Summersweet Clethra

Size: 3'-6'H x 3'-6'W.
Hardiness: zone 5 to 8.
Habit: Broad, rounded to ovate, clump forming.
Flowers/fruit: Long pink or white flower spikes 2" to 6" long appear in mid summer, a time when few other shrubs are in bloom.
Description: Glossy green foliage and aromatic flowers, tolerates sun or shade and prefers moist soil, will suffer in alkaline soil.

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Slide 12
Clethra alnifolia
Summersweet Clethra

Size: 3'-6'H x 3'-6'W.
Hardiness: zone 5 to 8.
Habit: Broad, rounded to ovate, clump forming.
Flowers/fruit: Long pink or white flower spikes 2" to 6" long appear in mid summer, a time when few other shrubs are in bloom.
Description: Glossy green foliage and aromatic flowers, tolerates sun or shade and prefers moist soil, will suffer in alkaline soil.

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Slide 13
Diervilla lonicera
Bush Honeysuckle

Size: 4'H x 4'W.
Hardiness: zone 4 to 7.
Habit: Low, spreading, suckering.
Flowers/fruit: Pale yellow, funnel-shaped flowers appear in mid summer.
Description: A durable plant that tolerates poor alkaline soils and can be rejuvenated every spring, plants will thrIIe in harsh, exposed sites.

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Slide 14
Ilex verticillata 'Red Sprite', 'Jim Dandy'
Winterberry

Size: 6'H x 5'W.
Hardiness: zone 4 to 7.
Habit: Dense, twiggy, upright and ovate.
Flowers/fruit: Flowers are white and appear in mid summer but are not showy. Fruit appear in late summer, bright red clusters and persists into the winter eventually being eaten by birds. Gray stems contrast nicely with the fruit.
Description: Plants are Dioecious (male and female plants required for fruit set). Plants will tolerate wet soils and prefer low pH. Because of this, many urban sites are not suitable for this species. 'Jim Dandy' is a male, and 'Red Sprite' is a female.

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Slide 15
Ilex verticillata 'Red Sprite', 'Jim Dandy'
Winterberry

Size: 6'H x 5'W.
Hardiness: zone 4 to 7.
Habit: Dense, twiggy, upright and ovate.
Flowers/fruit: Flowers are white and appear in mid summer but are not showy. Fruit appear in late summer, bright red clusters and persists into the winter eventually being eaten by birds. Gray stems contrast nicely with the fruit.
Description: Plants are Dioecious (male and female plants required for fruit set). Plants will tolerate wet soils and prefer low pH. Because of this, many urban sites are not suitable for this species. 'Jim Dandy' is a male, and 'Red Sprite' is a female.

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Slide 16
Ilex verticillata 'Red Sprite', 'Jim Dandy'
Winterberry

Size: 6'H x 5'W.
Hardiness: zone 4 to 7.
Habit: Dense, twiggy, upright and ovate.
Flowers/fruit: Flowers are white and appear in mid summer but are not showy. Fruit appear in late summer, bright red clusters and persists into the winter eventually being eaten by birds. Gray stems contrast nicely with the fruit.
Description: Plants are Dioecious (male and female plants required for fruit set). Plants will tolerate wet soils and prefer low pH. Because of this, many urban sites are not suitable for this species. 'Jim Dandy' is a male, and 'Red Sprite' is a female.

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Slide 17
Kerria japonica
Japanese Kerria

Size: 5'H x 6'W.
Hardiness: zone 5b to 7.
Habit: Soft textured lose, arching shrub with an open crown.
Flowers/fruit: Golden yellow flowers born in mid spring at the tips of new growth, 1 ½" across.
Description: Prefers dry soils and tolerates high pH. ThrIIes in light to heavy shade. Excellent for massing. Green stems, light green foliage, and flowers provide season interest.

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Slide 18
Kerria japonica
Japanese Kerria

Size: 5'H x 6'W.
Hardiness: zone 5b to 7.
Habit: Soft textured lose, arching shrub with an open crown.
Flowers/fruit: Golden yellow flowers born in mid spring at the tips of new growth, 1 ½" across.
Description: Prefers dry soils and tolerates high pH. ThrIIes in light to heavy shade. Excellent for massing. Green stems, light green foliage, and flowers provide season interest.

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Slide 19
Rosa rugosa 'Blanc Double de Coubert'
Rugosa Rose

Size: 4-5'H x 5'W.
Hardiness: zone 3 to 7.
Habit: Dense, broadly round with upright branches.
Flowers/fruit: Fragrant, white, double blooms produced nearly all summer. Dark red fruit (hips) ripen in late summer to early fall, are 1" in diameter and highly ornamental.
Description: A durable shrub rose notably tolerant of salt and relatIIely trouble free. One of the best white blooming types.

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Slide 20
Rosa rugosa 'Blanc Double de Coubert'
Rugosa Rose

Size: 4-5'H x 5'W.
Hardiness: zone 3 to 7.
Habit: Dense, broadly round with upright branches.
Flowers/fruit: Fragrant, white, double blooms produced nearly all summer. Dark red fruit (hips) ripen in late summer to early fall, are 1" in diameter and highly ornamental.
Description: A durable shrub rose notably tolerant of salt and relatIIely trouble free. One of the best white blooming types.

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Slide 21
Rosa rugosa 'Frau Dagmar Hastrup'
Rugosa Rose

Size: 4'H x 4'W.
Hardiness: zone 4 to 7.
Habit: Dense, broadly round with upright branches.
Flowers/fruit: Single, 1" pink flowers bloom all summer long, dark red fruit (hips) ripen in late summer to early fall, are 1" in diameter and highly ornamental.
Description: A prolific bloomer with rich dark green foliage and wonderful yellow to orange fall color. Shows excellent resistance to black spot and powdery mildew.

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Slide 22
Rosa rugosa 'Frau Dagmar Hastrup'
Rugosa Rose

Size: 4'H x 4'W.
Hardiness: zone 4 to 7.
Habit: Dense, broadly round with upright branches.
Flowers/fruit: Single, 1" pink flowers bloom all summer long, dark red fruit (hips) ripen in late summer to early fall, are 1" in diameter and highly ornamental.
Description: A prolific bloomer with rich dark green foliage and wonderful yellow to orange fall color. Shows excellent resistance to black spot and powdery mildew.

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Slide 23
Rosa 'Nearly Wild'
Nearly Wild Hybrid Rose

Size: 2'H x 2'W.
Hardiness: zone 3 to 7.
Habit: Compact, densely mounded.
Flowers/fruit: Single, 2" pink flowers bloom all season.
Description: One of the most durable, and because of its size, most useful hybrid roses, excellent for massing or for use as a small hedge. Plants will tolerate poor soil along with dry, hot conditions.

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Slide 24
Rosa 'Nearly Wild'
Nearly Wild Hybrid Rose

Size: 2'H x 2'W.
Hardiness: zone 3 to 7.
Habit: Compact, densely mounded.
Flowers/fruit: Single, 2" pink flowers bloom all season.
Description: One of the most durable, and because of its size, most useful hybrid roses, excellent for massing or for use as a small hedge. Plants will tolerate poor soil along with dry, hot conditions.

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Slide 25
Syringa meyeri 'Palibin'
Dwarf Korean Lilac

Size: 5'H x 4'W.
Hardiness: zone 4 to 8.
Habit: Small, mounded, compact.
Flowers/fruit: Violet-pink to purple, 4" panicles, appearing in early spring, fragrant.
Description: One of the best lilacs for flower effect and because of its compact size 'Palibin' is a great multi-purpose shrub. Very tolerant of urban stress, mildew resistant.

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Slide 26
Syringa meyeri 'Palibin'
Dwarf Korean Lilac

Size: 5'H x 4'W.
Hardiness: zone 4 to 8.
Habit: Small, mounded, compact.
Flowers/fruit: Violet-pink to purple, 4" panicles, appearing in early spring, fragrant.
Description: One of the best lilacs for flower effect and because of its compact size 'Palibin' is a great multi-purpose shrub. Very tolerant of urban stress, mildew resistant.

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Slide 27
Syringa patula 'Miss Kim'
Miss Kim Manchurian Lilac

Size: 5'H x 5'W.
Hardiness: zone 4 to 7.
Habit: Dense, broad-rounded.
Flowers/fruit: Bluish purple, fragrant clusters 3" long born in late spring.
Description: One of the only lilacs to offer a red-purple fall color. A durable, compact, long blooming shrub; tolerates high pH and dry soil. Unlike the common lilacs, does not contract the disease powdery mildew.

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Slide 28
Syringa patula 'Miss Kim'
Miss Kim Manchurian Lilac

Size: 5'H x 5'W.
Hardiness: zone 4 to 7.
Habit: Dense, broad-rounded.
Flowers/fruit: Bluish purple, fragrant clusters 3" long born in late spring.
Description: One of the only lilacs to offer a red-purple fall color. A durable, compact, long blooming shrub; tolerates high pH and dry soil. Unlike the common lilacs, does not contract the disease powdery mildew.

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Slide 29
Viburnum x, juddii
Judd Viburnum

Size: 6'H x 6'W.
Hardiness: zone 4 to 7.
Habit: Upright, rounded with a dense crown.
Flowers/fruit: Creamy white flowers, 2-3" across emerge in spring and are very fragrant.
Description: A very tough Viburnum that tolerates disease and pests better than most other Viburnum. Tolerates heat, drought and other urban stresses, excellent used as a specimen, in mass, or in the shrub border.

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Shrubs With a Height of Six Feet or More.

- Aesculus parviflora
- Aronia arbutifolia
- Aronia melanocarpa
- Calycanthus floridus
- Carnus sericea
- Cornus mas
- Corylus americana
- Cotinus coggygria
- Euonymus alatus
- Forsythia 'Meadowlark'
- Hamamelis vernalis
- Hamamelis virgiania
- Hydrangea paniculata
- Hydrangea quercifolia
- Rhus typhina 'Laciniata'
- Vibumum dentatum
- Vibumum dilatatum
- Vibumum prunifolium
- Vibumum trilobum

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Slide 31
Aesculus parviflora
Bottlebrush Buckeye

Size: 8' to 12'H x 12'W.
Hardiness: zone 5 to 8.
Habit: Broad, mounded, suckering.
Flowers/fruit: Pink to white flower spikes, 8" to 12" long, midsummer.
Description: Large suckering shrub that needs ample space to grow, excellent specimen plant and relatIIely disease free, fruit set does not occur in northern areas.

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Slide 32
Aesculus parviflora
Bottlebrush Buckeye

Size: 8' to 12'H x 12'W.
Hardiness: zone 5 to 8.
Habit: Broad, mounded, suckering.
Flowers/fruit: Pink to white flower spikes, 8" to 12" long, midsummer.
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Slide 33
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Flowers/fruit: Pink to white flower spikes, 8" to 12" long, midsummer.
Description: Large suckering shrub that needs ample space to grow, excellent specimen plant and relatIIely disease free, fruit set does not occur in northern areas.

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Slide 34
Aronia arbutifolia
Red Chokeberry

Size: 7'H x 6'W.
Hardiness: zone 4 to 7.
Habit: Upright rounded crown, slightly suckering.
Flowers/fruit: White flower clusters 3" to 5" across appear in late spring, ¼" bright red fruit are showy during late summer and fall; they attract wildlife.
Description: Tolerates dry, wet and poor soil, and pollution, plants will tolerate light shade, beautiful in flower and with fruit.

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Slide 35
Aronia arbutifolia
Red Chokeberry

Size: 7'H x 6'W.
Hardiness: zone 4 to 7.
Habit: Upright rounded crown, slightly suckering.
Flowers/fruit: White flower clusters 3" to 5" across appear in late spring, ¼" bright red fruit are showy during late summer and fall; they attract wildlife.
Description: Tolerates dry, wet and poor soil, and pollution, plants will tolerate light shade, beautiful in flower and with fruit.

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Slide 36
Arorna melanocarpa
Black Chokeberry

Size: 7'H x 5'W.
Hardiness: zone 4 to 7.
Habit: Broad, rounded, spreading shrub that will colonize if allowed.
Flowers/fruit: White clusters (corymbs) 6" to 8" wide appear in spring, large, heavy clusters of black fruit appear in late summer and are eaten by birds.
Description: An "all-season" plant with glossy green foliage, beautiful flowers, attractIIe fruit, and a bronzy red fall color. Hardier than *A. arbutifolia* and tolerant of poor soils.

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Slide 37
Arorna melanocarpa
Black Chokeberry

Size: 7'H x 5'W.
Hardiness: zone 4 to 7.
Habit: Broad, rounded, spreading shrub that will colonize if allowed.
Flowers/fruit: White clusters (corymbs) 6" to 8" wide appear in spring, large, heavy clusters of black fruit appear in late summer and are eaten by birds.
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Slide 38
Calycanthus floridus
Common Sweetshrub

Size: 7'H x 6'W.
Hardiness: zone 5 to 8.
Habit: Dense, broad, rounded.
Flowers/fruit: Two inch maroon red flowers appear in late spring and persist through mid-summer, small seed capsules persist into winter.
Description: Grows in sun or shade, flower buds are produced on previous season's growth. Therefore, pruning should be performed immediately after flowering. Used for screening or as part of a shrub border.

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Slide 39
Calycanthus floridus
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Size: 7'H x 6'W.
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Description: Grows in sun or shade, flower buds are produced on previous season's growth. Therefore, pruning should be performed immediately after flowering. Used for screening or as part of a shrub border.

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Slide 40
Cornus sericea (Cornus stolonifera)
Redoiser Dogwood

Size: 8'H x 8'W.
Hardiness: zone 3 to 7.
Habit: Large, rounded, multi-stemmed, spreading.
Flowers/fruit: White, flat-topped clusters (cymes) appear late spring, clusters of white fruit develop in place of the flowers and attract birds during late summer.
Description: Spreading shrub with red bark that tolerates wet sites and will colonize if allowed, removing old wood will help maintain bark color. The cultIIar 'Flaviramea' is a yellow twig selection that is unfortunately prone to disease and pest problems.

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Slide 41

Cornus sericea (Cornus stolonifera)

Redoiser Dogwood

Size: 8'H x 8'W.
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Slide 42
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Slide 43
Cornus mas
Corneliancherry Dogwood

Size: 10' to 20'H x 15'W.
Hardiness: zone 5 to 8.
Habit: Large ovate shrub or a small multi-stemmed tree.
Flowers/fruit: Yellow flower clusters appear in early spring before leaves emerge. Bright red drupes then emerge in mid-summer, and are quickly eaten by birds.
Description: Excellent large shrub or small tree for under-story planting, plants will tolerate some sun, and if grown as a small tree, suckers will need to be removed regularly, excellent spring flower display

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Slide 44
Cornus mas
Corneliancherry Dogwood

Size: 10' to 20'H x 15'W.
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Slide 45
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Slide 46
Corylus americana
American Hazlenut

Size: 9'H x 8'W.
Hardiness: zone 4 to 9.
Habit: Rounded, multi-stemmed shrub with open base.
Flowers/fruit: Brown catkins in early spring: 2"-3" long. Female flowers are inconspicuous.
Description: A large shrub that needs ample space to grow, excellent orange-rust fall color, natIIe to the Midwest, and a member of the Birch family, withstands urban conditions.

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Slide 47
Corylus americana
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Size: 9'H x 8'W.
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Slide 48
Euonymus alata
Burning Bush

Size: 12'H x 12'W.
Hardiness: zone 4 to 8.
Habit: Rounded outline.
Flowers/fruit: Inconspicuous.
Description: A potentially large shrub valued for its intense red fall color. Plants tolerate alkaline soil but will not tolerate drought. The cultIIar 'Compacta' is more suitable for landscape situations.

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Slide 49
Euonymus alata
Burning Bush

Size: 12'H x 12'W.
Hardiness: zone 4 to 8.
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Flowers/fruit: Inconspicuous.
Description: A potentially large shrub valued for its intense red fall color. Plants tolerate alkaline soil but will not tolerate drought. The cultIIar 'Compacta' is more suitable for landscape situations.

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Slide 50
Forsythia x 'Meadolark'
Early Forsythia

Size: 8'H x 8'W.
Hardiness: zone 5 to 7.
Habit: Upright, spreading, slightly arching branches.
Flowers/fruit: Brilliant yellow flowers engulf the stems in early spring.
Description: The hardiest forsythia for northern areas, after witchhazels these are the first plants to bloom, adapts to all types of soil conditions and pH ranges, withstands urban conditions and is free of pests and diseases.

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Slide 51
Forsythia x 'Meadolark'
Early Forsythia

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Flowers/fruit: Brilliant yellow flowers engulf the stems in early spring.
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Slide 52
Hamamelis vernalis
Vernal Witchhazel

Size: 8'H x 8'W.
Hardiness: zone 5 to 8.
Habit: Rounded with an irregular crown.
Flowers/fruit: Clusters of pungent, yellow to red flowers emerge in late winter.
Description: Tolerates heavy, alkaline soils, and thrIIes in sun or partial shade. Withstands urban stresses, and offers wonderful golden fall color.

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Slide 53
Hamamelis vernalis
Vernal Witchhazel

Size: 8'H x 8'W.
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Slide 54
Hamamelis virginiana
Common Witchhazel

Size: 15'H x 20'W.
Hardiness: zone 4 to 8.
Habit: Irregular, rounded and open.
Flowers/fruit: Tiny, fragrant, golde-yellow emerging in fall.
Description: A low maintenance, durable shrub perfect for understory planting; withstands city conditions and tolerates poor soil, one of the best shrubs for city environments.

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Slide 55
Hamamelis virginiana
Common Witchhazel

Size: 15'H x 20'W.
Hardiness: zone 4 to 8.
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Slide 56
Hydrangea paniculata
Panicle Hydrangea

Size: 8-10'H x 8'W.
Hardiness: zone 4 to 7.
Habit: Upright, broad and spreading, can be trained into a small tree.
Flowers/fruit: Large clusters to 8" long opening in July, white turning to pink.
Description: Ultimately a large shrub that needs adequate space to flourish, fast growing and flowers for long periods of time. 'TardIIa' and 'Unique' are excellent cultIIars selected for their more compact habit.

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Slide 57
Hydrangea paniculata
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Size: 8-10'H x 8'W.
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Slide 58
Hydrangea quercifolia
Oakleaf Hydrangea

Size: 7'H x 4'W.
Hardiness: zone 5 to 9.
Habit: Upright, mounded, spreads by weak stems drooping to the ground and rooting.
Flowers/fruit: Large panicles 6" to 12" long, white turning pink, emerging in late June.
Description: Large, course-textured shrub, tolerant of shade. Stems are weak and therefore, planting in high traffic areas should be avoided; attractIIe orange-red to brown fall color.

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Slide 59
Hydrangea quercifolia
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Hardiness: zone 5 to 9.
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Description: Large, course-textured shrub, tolerant of shade. Stems are weak and therefore, planting in high traffic areas should be avoided; attractIIe orange-red to brown fall color.

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Slide 60
Rhus typhina 'Laciniata'
Cutleaf Sumac

Size: 15'-20'H x 15'W.
Hardiness: zone 3 to 7.
Habit: very loose, open shrub or small tree with a flat-topped crown.
Flowers/fruit: Dense, hairy panicles 4" to 8" long, green-yellow, appear in late June, plants are Dioecious. 'Laciniata' is a female and should be planted among males of this species. Bright red, pubescent fruit clusters contrast nicely with the finely cut green foliage in late summer.
Description: A large multi stemmed shrub or small tree valued for its fruit and striking red fall color. Tolerates poor soil, high pH, pollution and drought. Needs adequate space to spread, ideal for hillside or bank planting.

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Slide 61
Rhus typhina 'Laciniata'
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Slide 62
Viburnum dentatum
Arrowwood Viburnum

Size: 8-10'H x 8'W.
Hardiness: zone 3 to 8.
Habit: Multistemmed with rounded upright appearance.
Flowers/fruit: White, flat-topped cymes, 2-4" across emerge in late spring. Bluish black, ¼" fruits ripen in late summer and are attractIIe to birds.
Description: Arguably the most durable Viburnum. Valued for its tolerance to pollution, salt, poor soil, and high pH. Suckers from the base and may have to be maintained to control. 'Morton' and 'Ralph senior' are excellent selections.

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Slide 63
Viburnum dentatum
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Slide 66
Viburnum dilatatum
Linden Viburnum

Size: 8'H x 6'W.
Hardiness: zone 4 to 7.
Habit: Upright, open, and often lose and somewhat leggy.
Flowers/fruit: White, flat-topped, 3-5" cymes emerge in late May, bright red 1/3" fruit emerge in early fall and often persist through winter - highly ornamental.
Description: An excellent three-season shrub valued for its flower, foliage, and fruit; superb tolerance to urban stress.

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Slide 67
Viburnum dilatatum
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Description: An excellent three-season shrub valued for its flower, foliage, and fruit; superb tolerance to urban stress.

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Slide 68
Viburnum prunifolium
Blackhaw Viburnum

Size:10'H x 10'W.
Hardiness: zone 3 to 9.
Habit: large, upright, mounded, and multistemmed.
Flowers/fruit: White, flat-topped cymes, 2-4" across emerge in late May followed by pink fruit in late summer that ripen to a dark blue in fall. Fruit is edible and can be used in preserves.
Description: Tolerates dry soil and will thrIIe in sun or shade. A durable plant valued for its fall color which is an attractIIe bronze-red.

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Slide 69
Viburnum prunifolium
Blackhaw Viburnum

Size:10'H x 10'W.
Hardiness: zone 3 to 9.
Habit: large, upright, mounded, and multistemmed.
Flowers/fruit: White, flat-topped cymes, 2-4" across emerge in late May followed by pink fruit in late summer that ripen to a dark blue in fall. Fruit is edible and can be used in preserves.
Description: Tolerates dry soil and will thrIIe in sun or shade. A durable plant valued for its fall color which is an attractIIe bronze-red.

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Slide 70
Viburnum trilobum
American Cranberrybush Viburnum

Size: 8'H x 8'W.
Hardiness: zone 3 to 7.
Habit: Dense, rounded, and often spreading.
Flowers/fruit: White, spring blooming, 3-4" cymes; 1/3" bright red fruits appear in early fall and persist into February. The fruit are highly ornamental and used in preserves and jellies.
Description: Offers excellent flower, fruit, and foliage; ideal for screening and as a barrier. Will not tolerate wet soil. 'Hahs' and 'Compactum' are excellent cultIIars selected for their larger fruit.

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Slide 71
Viburnum triloburn
American Cranberrybush Viburnum

Size: 8'H x 8'W.
Hardiness: zone 3 to 7.
Habit: Dense, rounded, and often spreading.
Flowers/fruit: White, spring blooming, 3-4" cymes; 1/3" bright red fruits appear in early fall and persist into February. The fruit are highly ornamental and used in preserves and jellies.
Description: Offers excellent flower, fruit, and foliage; ideal for screening and as a barrier. Will not tolerate wet soil. 'Hahs' and 'Compactum' are excellent cultIIars selected for their larger fruit.

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Slide 72

Viburnum triloburn

American Cranberrybush Viburnum

Size: 8'H x 8'W.
Hardiness: zone 3 to 7.
Habit: Dense, rounded, and often spreading.
Flowers/fruit: White, spring blooming, 3-4" cymes; 1/3" bright red fruits appear in early fall and persist into February. The fruit are highly ornamental and used in preserves and jellies.
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Rosa 'Nearly Wild'
Nearly Wild Hybrid Rose

Size: 2'H x 2'W.
Hardiness: zone 3 to 7.
Habit: Compact, densely mounded.
Flowers/fruit: Single, 2" pink flowers bloom all season.
Description: One of the most durable, and because of its size, most useful hybrid roses, excellent for massing or for use as a small hedge. Plants will tolerate poor soil along with dry, hot conditions.

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Section III: Selecting Conifers for Urban Areas

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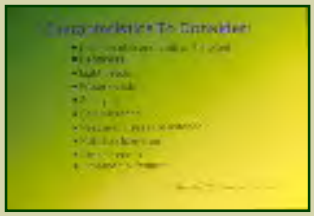
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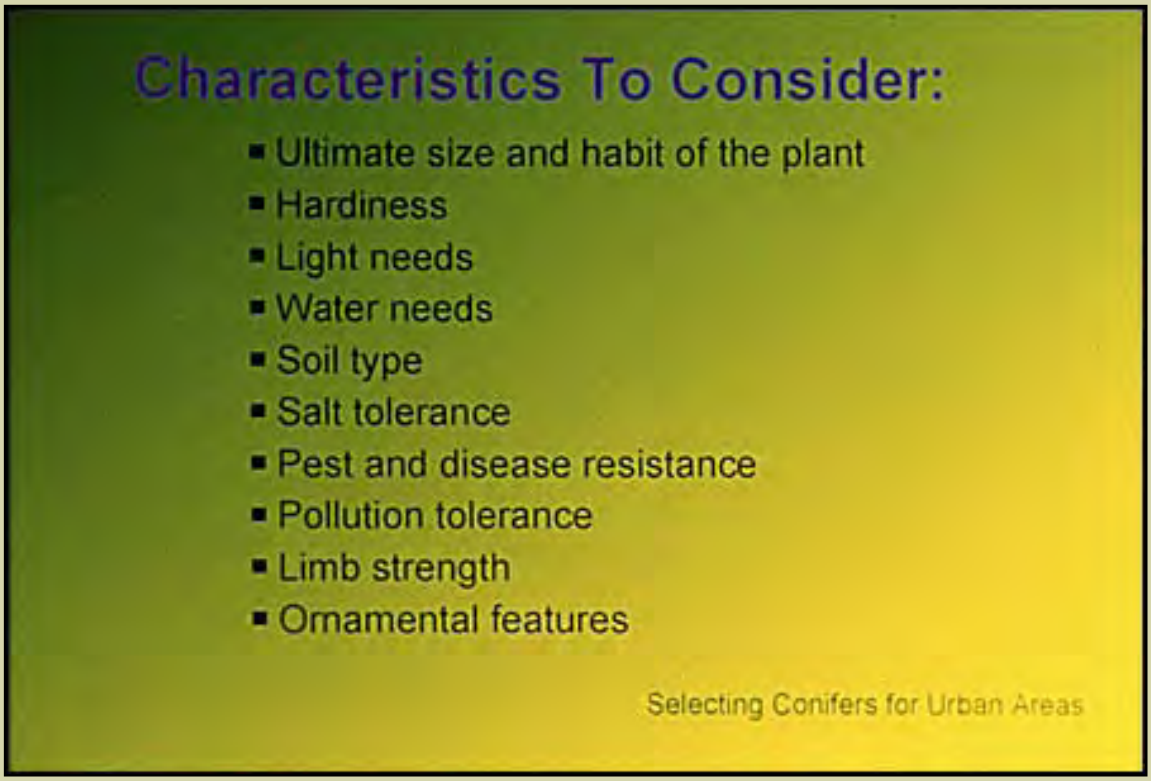

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Slide 3
Major Conifer Genera.

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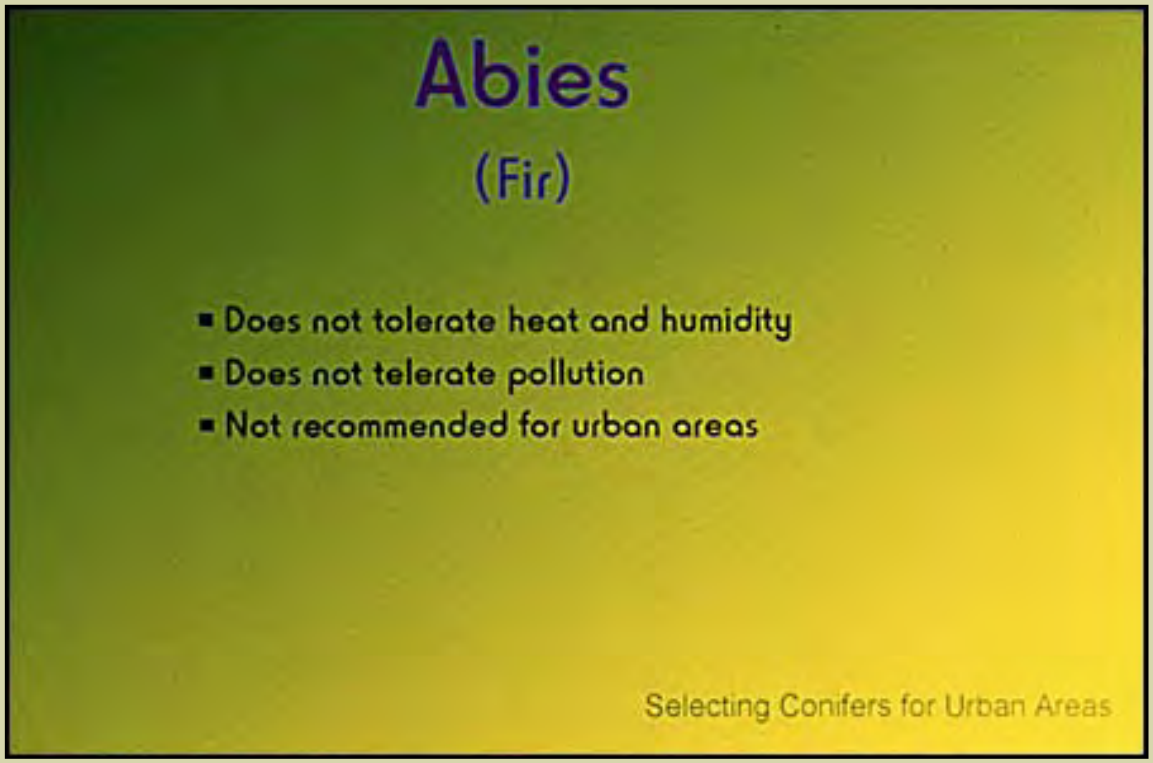

Slide 4
Abies (Fir)

The genus Abies is a member of the Pine family and is composed of about forty species of symmetrical, conical evergreen trees. Firs typically prefer a cool climate away from heat and humidity. They will not tolerate pollution and cannot withstand urban stress. For these reasons they are not recommended for use in urban areas in the Midwest.

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Juniperus
(Juniper)
Requires full sun
Tolerates pollution and salt spray
Tolerates poor soil
Adapts to wide range of soil pH
Available in wide range of sizes
Available in wide variety of shapes/forms
Selecting Conifers for Urban Areas

Slide 5
Juniperus (Juniper)

A genus composed of about sixty species of coniferous evergreens, thirteen of which are native to the United States. Junipers range in habit from large trees to shrubs to sprawling groundcovers. Foliage color ranges from light green to dark green to blue green to yellow. They require full sun conditions and are excellent plants for urban areas, as they will tolerate pollution, salt spray, poor soil, and a wide range of soil pH. Junipers can be used as hedges, screens, groundcovers, specimens, or in mass. The two native species listed, *Juniperus horozontalis*, and *Juniperus virginiana* are more susceptible to disease and pest problems than the non-native species. Superior cultivars of these species should be selected.

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Slide 6
Juniperus chinensis
Chinese Juniper

A large conical tree reaching 50'x 20'. Generally too large for landscape situations - selected varieties are recommended below. The species as well as the selections are hardy to zone 4.

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Slide 7
Juniperus chinensis
Chinese Juniper

'Iowa'
An upright, pyramidal form with a somewhat loose habit; plants reach 12'x 6' and offer year-round blue-green foliage; resistant to Phomopsis.

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Slide 8
Juniperus chinensis
Chinese Juniper

'Mountbatten'
Stiff, narrowly upright reaching 18'x 7', foliage is pale gray to green, and plants are tolerant of pollution and heat. A tough juniper for city conditions.

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Slide 9
Juniperus chinensis
Chinese Juniper

'Maney'
A large, semi-upright, shrub type with bluish green foliage reaching 7' x 6'. A female with ornamental cones, one of the best for cold hardiness and salt tolerance.

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Slide 10
Juniperus chinensis
Chinese Juniper

'Mint Julip'
Bright, mint green foliage with attractive bluish cones reaching 6'x 6'. Often mislabeled as 'Sea Green'. Not a dwarf. Excellent for massing, and planting in shrub borders.

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Slide 11
Juniperus chinensis
Chinese Juniper

'Mint Julip'
Bright, mint green foliage with attractive bluish cones reaching 6'x 6'. Often mislabeled as 'Sea Green'. Not a dwarf. Excellent for massing, and planting in shrub borders.

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Slide 12
Juniperus chinensis
Chinese Juniper

'Kallay's Compact'
A compact, flat-topped, spreading selection of a pfitzer. Maintains good winter color and reaches 4' in height and nearly 7' in width.

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Slide 13
Juniperus chinensis
Chinese Juniper

var. procumbens 'Nana'
A very tight, compact, mat-forming selection with a trailing habit. Offers attractive gray-green foliage with a coarse, prickly texture. Plants mound in the center. A very durable plant, excellent for urban conditions.

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Slide 14
Juniperus chinensis
Chinese Juniper

var. sargentii 'Glauca'
Attractive dwarf form reaching 2'x 6' with blue-gray foliage. Branches are ascending with a feathery appearance. Plants are highly durable, and this cultivar is considered by many to be the best juniper available.

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Slide 15
Juniperus chinensis
Chinese Juniper

var. sargentii 'Viridis'
Similar in size and habit to var. sargentii 'Glauca' but with green foliage; another excellent plant for the urban environment.

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Slide 16
Juniperus chinensis
Chinese Juniper

'Fairview'
A tall, narrow, upright form with attractive silver-blue cones appearing in late summer. One of the hardiest *Juniperus chinensis* types.

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Slide 17
Juniperus communis
Common Juniper

The species is a broad, upright, rounded tree reaching 20' x 10' not suitable for landscape use. Selected varieties are recommended. Leaves of this species are long and needlelike. Tolerates high pH levels and is hardy as far north as zone 2.

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Slide 18
Juniperus communis
Common Juniper

'Repanda'
A low sprawling type perfect for cascading over walls. Maintains rich green color throughout the year, and will thrive in the worst of soils.

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Slide 19
Juniperus communis
Common Juniper

var. depressa
Referred to as Common Oldfield Juniper, more upright and open than 'Repanda' and reaching sizes of 5'x 6'. Branches radiate at a 45-degree angle similar to a pfitzer and leaves are lighter green than 'Repanda'. Plants are capable of thriving in poor, sandy or gravelly soil.

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Slide 20
Juniperus horizontalis
Creeping Juniper

A native species that suffers severely from Phomopsis blight. All selections are low growing, mat forming groundcovers with trailing branches. Hardy from zone 3 to 8, plants are valued for their adaptability to sandy and rocky soil. Plants withstand hot, dry conditions, and are ideal for slope planting.

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Slide 21
Juniperus horizontalis
Creeping Juniper

'Wiltonii'
The most tolerant of the horozontalis types to Phomopsis blight. A fast growing form with intense silver-blue foliage turning purplish in winter. Plants are mat-forming reaching heights of only 6-8 inches.

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Slide 22
Juniperus sabina
Savin Juniper

Like other junipers, the species is not suitable for landscape use because of its large spreading habit and the poor appearance of the foliage. Hardy from zone 4 to 7, Savin junipers withstand urban conditions and will thrive in open, hot, sunny sites with high soil pH.

'Calgary Carpet'
A low growing, soft textured juniper with light green foliage and uniform habit. Attains a size of 2 1/2' x 6'. Resistant to Phomopsis blight.

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Slide 23
Juniperus sabina
Savin Juniper

'Broadmoor'

An excellent selection for urban areas. The habit is wide spreading and mounding in the center. Grows to 3' high and can spread up to 10'. Resists Phomopsis. Foliage is deep green with juvenile foliage appearing silver-gray.

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Slide 24
Juniperus sabina
Savin Juniper

'Buffalo'

A low, mat-forming selection reaching only 10-12" high with a spread of up to 6'. Foliage is green-yellow and feathery. A female selection with numerous, bluish-bloomy cones ¼" in diameter.

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Slide 25

Juniperus virginiana

Eastern Red Cedar

Another native species found growing along roadsides throughout the Midwest and the East. An upright tree with a single leader reaching 40-50' in height and 20-25 feet in width. The species should not be grown as a landscape plant because of its disease problems; selected cultivars are recommended. Valued for its fragrant heartwood which is used for cedar chests, closets.

'Cancertii'

A slow growing, loosely pyramidal form with dark green foliage. Plants reach 20-25' high with a 15' spread resistant to bagworm but susceptible to rust. Habit becomes loose and spreading with age; plants are very attractive and are ideal for accent or specimens.

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Slide 26
***Larix* (Larch)**

A small group of deciduous conifers which are hardy from zone 2 to 6 and are members of the pine family. Larches are best reserved for large open spaces where they have adequate root space. They will thrive in wet or dry locations but will not tolerate heavy clay soil or polluted areas. Larches are not recommended for urban areas.

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Picea
(Spruce)
Well adapted to urban areas
Tolerates pollution and salt spray
Tolerates windy conditions
Tolerates heavy clay soils
Adapts to wide range of soil pH
Available in wide range of sizes
Selecting Conifers for Urban Areas

Slide 27'Cancertii'
A genus of about forty-five species of dense, usually pyramidal evergreen. Spruces are well adapted for urban conditions and will tolerate a wide range of soil types. They tolerate heavy winds and make excellent screens. *Picea omorika* and *Picea pungens* are more tolerant of dry conditions than other species. Spruces perform well in the heavy clay soils of the Midwest and offer a range of foliage colors from light green to dark green to bright blue.

Picea abies
Norway Spruce

An upright, narrowly pyramidal tree attaining heights of 70 to 80 feet. Branches become pendulous with age. Cones are the longest of the spruces - 6 to 8 inches long. A very formal tree with dark green, year-round foliage. Selections have the same cultural needs as the species. Hardy to zone 3, they require moist, well-drained soil in a relatively cold climate. If used as a hedge, plants should be pruned when young.

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Slide 28
Picea abies
Norway Spruce

'Cupressina' (Cypress Spruce)
A tall, narrow, upright form reaching 40 to 50 feet high and only 10 to 15 feet in width. Branches are ascending with soft needles. Excellent for tight spaces with overhead room.

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Slide 29
Picea abies
Norway Spruce

'Cupressina' (Cypress Spruce)

A tall, narrow, upright form reaching 40 to 50 feet high and only 10 to 15 feet in width. Branches are ascending with soft needles. Excellent for tight spaces with overhead room.

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Slide 30
Picea abies
Norway Spruce

'Mucronata'

A dwarf compact selection as wide as tall. Plants can reach 15 feet in height and nearly the same in width. Slow growing with a rather squat appearance.

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Slide 31
Picea abies
Norway Spruce

'Nidiformis' (Birds Nest Spruce)
A dwarf, spreading form that reaches only 3 to 4 feet in height and 4 to 5 feet in width. Plants are compact and very tightly branched. 'Nidiformis' is a very durable dwarf conifer.

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Slide 32
Picea abies
Norway Spruce

'Pendula' (Weeping Norway Spruce)
Young plants need to be staked and will ultimately grow as high as the stake. Branches then cascade to the ground and develop a sprawling, prostrate habit. 'Pendula' is an interesting and eye-catching specimen plant.

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Slide 33
Picea abies
Norway Spruce

'Pendula' (Weeping Norway Spruce)
Young plants need to be staked and will ultimately grow as high as the stake. Branches then cascade to the ground and develop a sprawling, prostrate habit. 'Pendula' is an interesting and eye-catching specimen plant.

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Slide 34
***Picea glauca* var. densata**
Black Hills Spruce

A naturally occurring form resembling Norway Spruce and reaching 30 to 40 feet high at maturity. Habit is more dense and compact than the species. Hardy to zone 3.

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Slide 35
Picea omorika
Serbian Spruce

The narrowest of all spruce. A very graceful tree with pendulous branches and gray-green foliage. Also the most adaptable spruce, tolerant of pollution and other urban conditions. Hardy to zone 5.

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Slide 36
Picea pungens
Colorado Spruce

A coarse-textured, pyramidal upright tree hardy as far north as zone 2. Attaining a height of 60 feet and a width of 20 feet, Colorado spruce is ideally used as a windbreak or a specimen. Plants withstand urban stress and are tolerant of poor soil and hot and dry conditions. Much variation in foliage color occurs in seed-grown plants, resulting in trees with various shades of blue, gray and green foliage.

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Slide 37
Picea pungens
Colorado Spruce

forma glauca
A naturally-occurring selection known as Colorado Blue Spruce. Foliage is bright blue, and plants must be vegetatively propagated to retain color; same cultural needs as the species.

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Slide 38
Picea pungens
Colorado Spruce

forma glauca
A naturally-occurring selection known as Colorado Blue Spruce. Foliage is bright blue, and plants must be vegetatively propagated to retain color; same cultural needs as the species.

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Slide 39
Picea pungens
Colorado Spruce

'Hoopsii'
A dense, glaucous blue selection reaching 30' high and 15' wide. A narrow selection perfect as an accent plant and more suitable for tree lawn planting than other selections. Arguably the brightest and bluest blue spruce available.

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Slide 40
Picea pungens
Colorado Spruce

'Hoopsii'
A dense, glaucous blue selection reaching 30' high and 15' wide. A narrow selection perfect as an accent plant and more suitable for tree lawn planting than other selections. Arguably the brightest and bluest blue spruce available.

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Slide 41
Picea pungens
Colorado Spruce

'Koster'
A very durable pyramidal form reaching 30 feet high and 20 feet wide. Foliage is steel blue and prickly. Probably the most widely used blue spruce.

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Slide 42
Picea pungens
Colorado Spruce

'Montgomery'

A dwarf, compact selection forming a broad conical shape reaching 15 feet high and 12 feet wide. Foliage is silver-blue and quite striking.

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Slide 43
Picea pungens
Colorado Spruce

'Montgomery'

A dwarf, compact selection forming a broad cone reaching 15 feet high and 12 feet wide. Foliage is silver-blue and quite striking.

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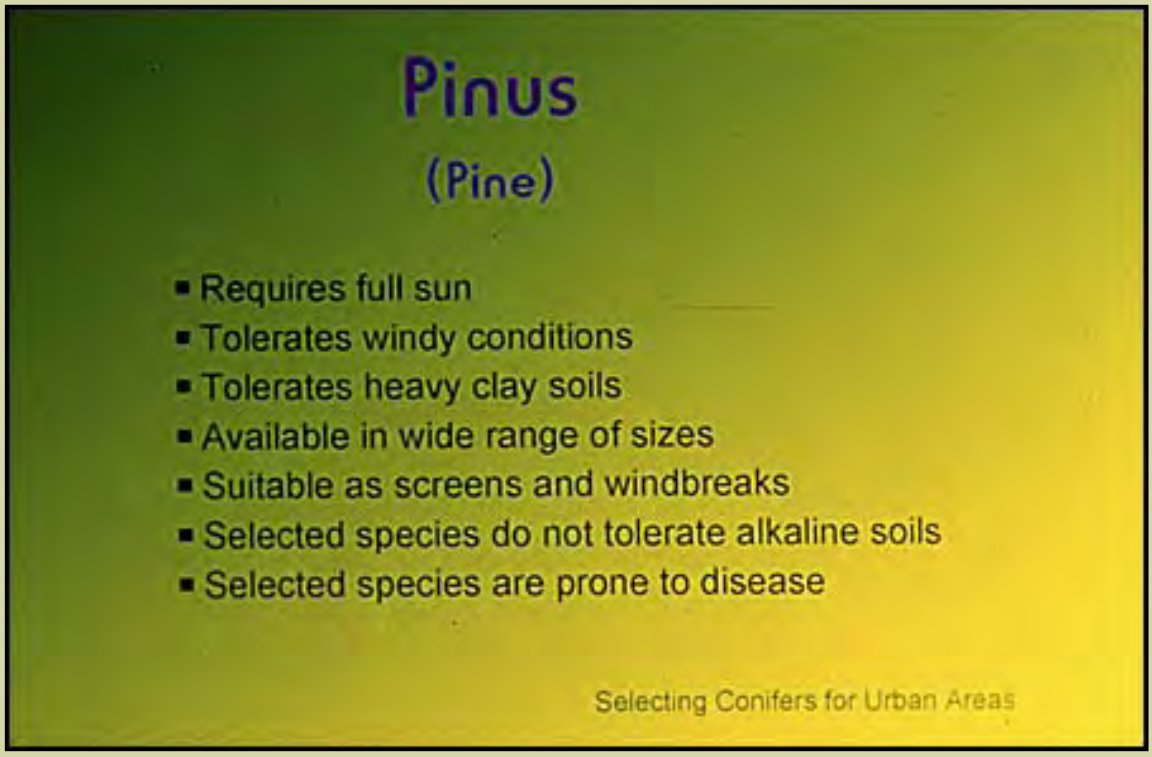
Pinus
(Pine)
Requires full sun
Tolerates windy conditions
Tolerates heavy clay soils
Available in wide range of sizes
Suitable as screens and windbreaks
Selected species do not tolerate alkaline soils
Selected species are prone to disease
Selecting Conifers for Urban Areas

Slide 44
***Pinus* (Pine)**

Comprising approximately 90 species, 41 being native to the United States, the pines are generally considered more durable than spruces and firs. Pines require full sun and will tolerate a wide range of soil pH. Leaves (needles) of all pines are grouped in clusters (fascicles) of 2, 3, or 5. The 2-needle pines are generally more tolerant of urban conditions than the 3-needle types, while the 3-needle types are more tolerant than the 5-needle types. Pines make excellent hedges, screens and even specimens. Mass plantings of a single species should be avoided because of poor air circulation, risk of disease, and unwanted shade.

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Slide 45
Pinus cembra
Swiss Stone Pine

Slow-growing form with a narrow habit; a 25-foot tree may be only 6 to 8 feet wide. Two to three inch cones mature the third year with edible pine nuts. Tolerant of high pH and pollution; 5-needle type, hardy to zone 4.

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Slide 46
Pinus koraiensis
Korean pine

A 5-needle type with white bands on each needle which give the plant a glaucous appearance. One of the most cold-hardy pines (z2). Attains a height of 40 feet and develops an open habit with age.

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Slide 47
Pinus leucodermis
Bosnian Pine

A slow-growing form with dark green foliage and light gray bark. Plants reach 30 feet high and 20 feet wide; more durable than Austrian Pine but not as vigorous. A 2-needle type hardy to zone 5.

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Slide 48
Pinus mugo
Mugo Pine

A variable species growing to 30 feet high and 20 feet wide. Seed variation results in dwarf plants growing only one to two feet high. A 2-needle type hardy to zone 2 and tolerant of many urban stresses including pollution, high pH, poor soil, and salt. When using dwarfs, select only vegetatively propagated plants.

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Slide 49
Pinus mugo
Mugo Pine

'Pumilio'
A semi-dwarf growing 4 feet high and 6 feet wide; same cultural requirements as the species.

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Slide 50
Pinus nigra
Austrian Pine

A 2-needle type attaining a height of 40 feet high and a width of 30 feet. Tolerant of pollution, salt, poor soil, high pH, and dying winter winds. Susceptible to Diplodia tip blight, a disease which kills new buds and shoots. Hardy to zone 4.

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Slide 51
Pinus peuce
Macedonian Pine

A formal columnar tree that spreads with age. A 5-needle type closely resembling white pine, but not as open in habit. Grows to 50 feet high and 35 feet wide. Hardy to zone 5.

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Slide 52
Pinus strobus
White Pine

A large pyramidal tree becoming flat-topped and open with age. A 5-needle type reaching 80 feet in the wild but usually 50 feet under landscape conditions. Of the pines, white pines are the least tolerant of urban stress. On soils with high pH, chlorosis occurs, and on windy sites leaf scorch can be a problem. White pine is a picturesque tree with a graceful habit but is not well adapted to the urban environment.

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Slide 53
Pinus strobus
White Pine

A large pyramidal tree becoming flat-topped and open with age. A 5-needle type reaching 80 feet in the wild but usually 50 feet under landscape conditions. Of the pines, white pines are the least tolerant of urban stress. On soils with high pH, chlorosis occurs, and on windy sites leaf scorch can be a problem. White pine is a picturesque tree with a graceful habit but is not well adapted to the urban environment.

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Slide 54
Pinus sylvestris
Scotch Pine

A wide-spreading, flat-topped tree that is more pyramidal in youth. Grows 30 to 40 feet high and up to 30 feet wide. A 2-needle type hardy to zone 3. Foliage is bluish green with short needles. The only pine with orange bark. Also susceptible to Diplodia tip blight.

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Slide 55
Pinus sylvestris
Scotch Pine

A wide-spreading, flat-topped tree that is more pyramidal in youth. Grows 30 to 40 feet high and up to 30 feet wide. A 2-needle type hardy to zone 3. Foliage is bluish green with short needles. The only pine with orange bark. Also susceptible to Diplodia tip blight.

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Slide 56
Pinus sylvestris
Scotch Pine

'Watereri'
A semi-dwarf mounding form with similar features as the species. Grows to 12 feet with an 8-foot spread and is more suitable for landscape situations than the species; an excellent specimen or accent plant.

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Slide 57
***Taxodium* (Baldcypress)**

The geographic range of the Baldcypress is vast. Native to swamps and bogs in areas of zone 8, the species will thrive as far north as southern Canada. One of the few deciduous conifers available, Baldcypress will grow in standing water and can also adapt to dry soil. Excellent for large open spaces such as parks and golf courses. Can be used as a street tree, though in highly alkaline soils trees will suffer from chlorosis.

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Slide 58
Taxodium distichum
Baldcypress

Under landscape conditions baldcypress can reach 40 to 50 feet high and 20 feet wide. A very slender and graceful tree with beautiful yellow green foliage in spring, darkening in summer, and turning bronze-brown in fall.

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Slide 59
Taxodium distichum
Baldcypress

Under landscape conditions baldcypress can reach 40 to 50 feet high and 20 feet wide. A very slender and graceful tree with beautiful yellow green foliage in spring, darkening in summer, and turning bronze-brown in fall.

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Slide 60
Taxodium distichum
Baldcypress

'Shawnee Brave'
A tall, narrow form reaching 60 feet high and only 15 to 18 feet wide. Has excellent possibilities as a street tree.

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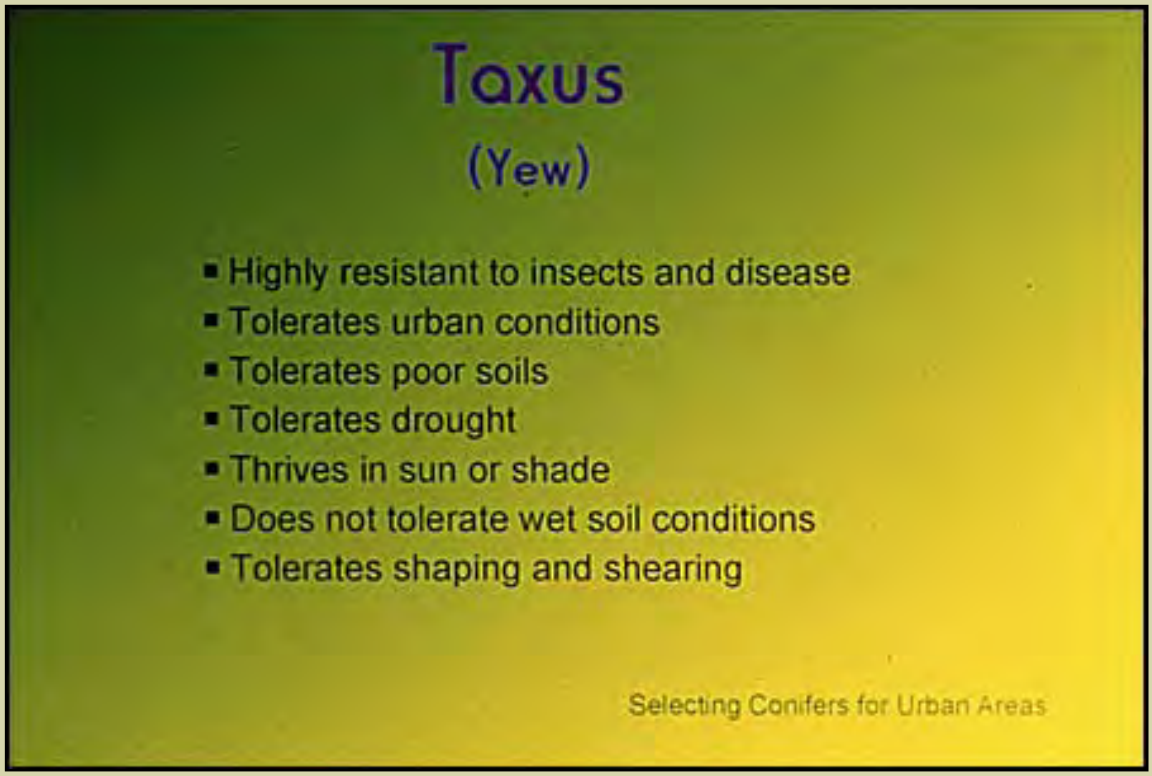

Slide 61
***Taxus* (Yew)**

Popular shrubs valued for their hardiness, resistance to insects and disease, and durability. Often overused in foundation plantings, yews can be found in almost any neighborhood in the Midwest. Yews have excellent year round color. They offer a wide range of forms and a slow to medium growth rate. They will tolerate dry and moist soil but will suffer if conditions are wet. Yews thrive in sun or shade but will not tolerate harsh winds.

Taxus x media
Aglojapanese Yew

A variable species ranging in habit from broad spreading, to upright, pyramidal to columnar. Slow growing species hardy to zone 4.

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Slide 62
Taxus x media
Aglojapanese Yew

'Densiformis'
A broad, spreading form twice as wide as high. Somewhat susceptible to winter burn. Plants grow 3 to 4 feet high and twice as wide.

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u

Slide 63
Taxus x media
Aglojapanese Yew

'Tauntonii'

One of the best for cold hardiness and tolerant of winter burn. Plants grow to four feet high and 6 feet wide without pruning; develops an open habit with age. Discolors in winter.

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Slide 64
Taxus x media
Aglojapanese Yew

'Wardii'

A slow growing, compact form that is spreading and flat-topped. Plants can spread up to 15 feet if left unpruned. Foliage remains deep green year-round; an excellent performer.

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Slide 65
Taxus cuspidata
Japanese Yew

A variable species with habit ranging from pyramidal to columnar, to broadly spreading or mounding. Hardy to zone 4, Japanese yews are excellent for massing or in a hedge. They have the same cultural needs as the species and with age they develop an attractive red-brown bark that peels off in thin strips.

'Capitata'
A very common, broadly pyramidal form reaching 20 feet high and 10 feet wide. Must be pruned when young to develop a dense habit. Maintains deep green color year-round.

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Thuja
(Arborvitae)
Suitable for hedges and screens
Requires full sun
Tolerates shearing
Available in a wide range of sizes
Available in a variety of shapes/forms
Selected species susceptible to snow damage
Selecting Conifers for Urban Areas

Slide 66
***Thuja* (Arborvitae)**

Outstanding plants for hedges and screening, the Arborvitaes offer various sizes and forms with varying foliage color. Five species are native to North America but only two are recommended for urban use. Arborvitaes require full sun but will tolerate partial shade. In dense shade, plants lose their form and become loose and open in habit. Plants respond well to shearing which should be performed in spring before the flush of new growth occurs. Arborvitae tolerate wet to dry soil but will not thrive under extreme conditions.

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Slide 67
Thuja occidentalis
American Arborvitae

A variable species ranging in height for 2 feet to 40 feet. Hardy from zone 3 to 7, American arborvitae are densely branched trees or shrubs with dark green sprays of foliage that have a tendency to turn yellow-brown in winter. Most *Thuja* lose their form with age developing a loose, natural appearance.

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Slide 68
Thuja occidentalis
American Arborvitae

'Hetz Midget'
A small, mounding, globe-shaped selection reaching 3 feet by 3 feet. Maintains rich green color year-round.

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Slide 69
Thuja occidentalis
American Arborvitae

'Hetz Wintergreen'

A tall, narrow form reaching 25 feet high and only 5 feet wide. Plants have a single trunk, reducing the problem of broken limbs due to heavy, wet snow in winter. Most other forms are multi-branched, which results in broken limbs because of snow load. An excellent selection with a rich green color.

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Slide 70
Thuja occidentalis
American Arborvitae

'Holmstrup'
A slow-growing narrowly pyramidal form reaching 6 feet high and 3 feet wide. Plants have tightly branched bright green foliage with vertically arranged sprays; excellent for low hedges.

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Slide 71
Thuja occidentalis
American Arborvitae

'Nigra'
A large pyramidal form reaching 20 feet high and 5 feet wide. One of the best for deep green winter color.

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Slide 72
Thuja occidentalis
American Arborvitae

'Smaragd'
Referred to in the trade as 'Emerald Green'; a medium sized pyramidal form with densely branched sprays of foliage. Slight discoloration in winter but plants remain attractive year-round.

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Slide 73
Thuja occidentalis
American Arborvitae

'Techny'
A broad pyramidal form reaching 8 feet high and 5 feet wide. Plants maintain beautiful deep green winter color; ideal for hedges or screens.

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Slide 74
Thuja occidentalis
American Arborvitae

'Wareana'
An extremely hardy selection ideal for northern areas. Plants have low pyramidal habit with bright green foliage. 'Wareana' will grow to 5 feet high and 3 to 4 feet wide.

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Slide 75
Thuja plicata
Western Arborvitae

Growing up to 100 feet in the wild, plants typically reach 30 to 50 feet under landscape situations and retain their branches and foliage to the ground. Tolerant of a wide range of soil types. Plants prefer moist conditions to maintain vigor; on dry sites growth is stunted. Maintains color better than most *Thuja occidentalis* types.

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